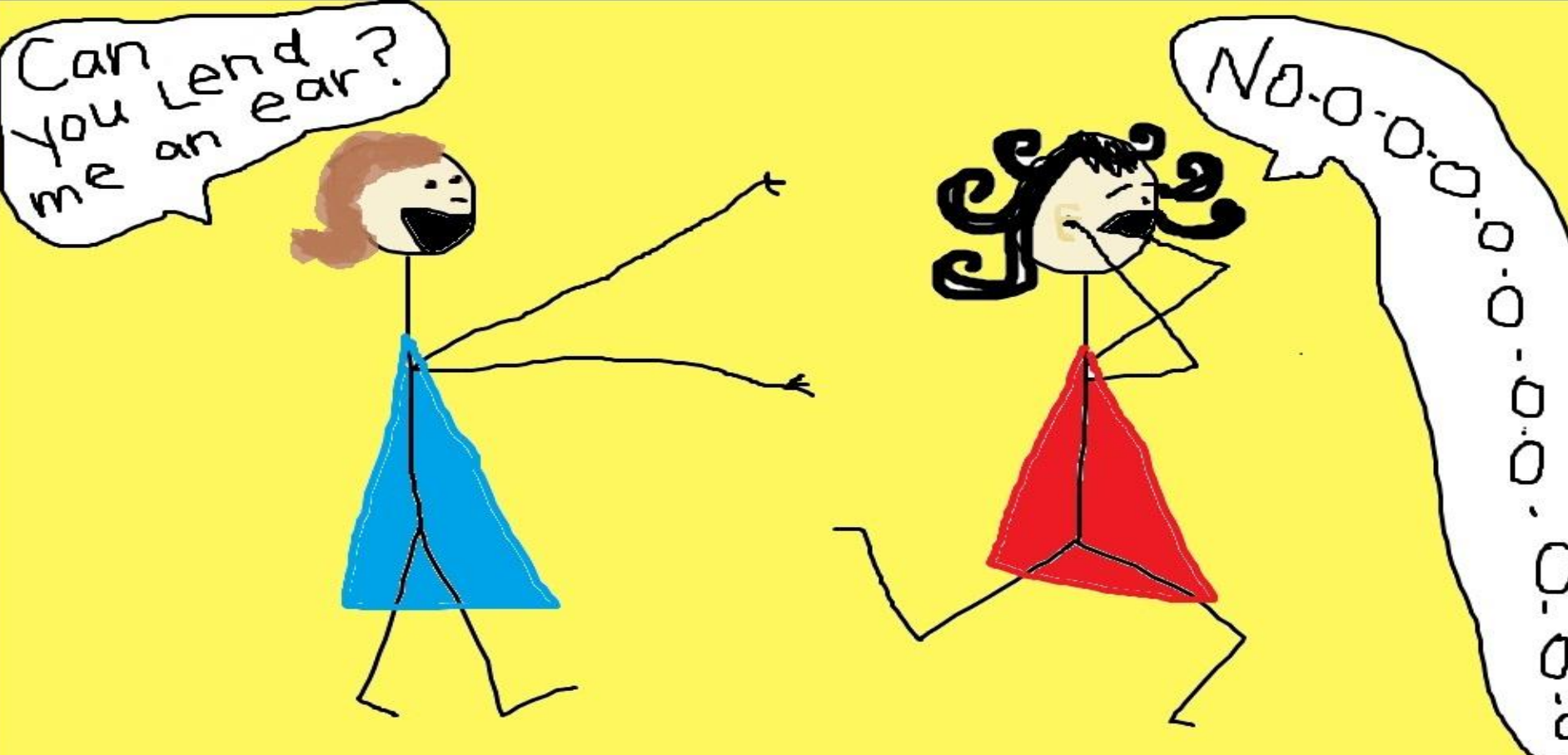
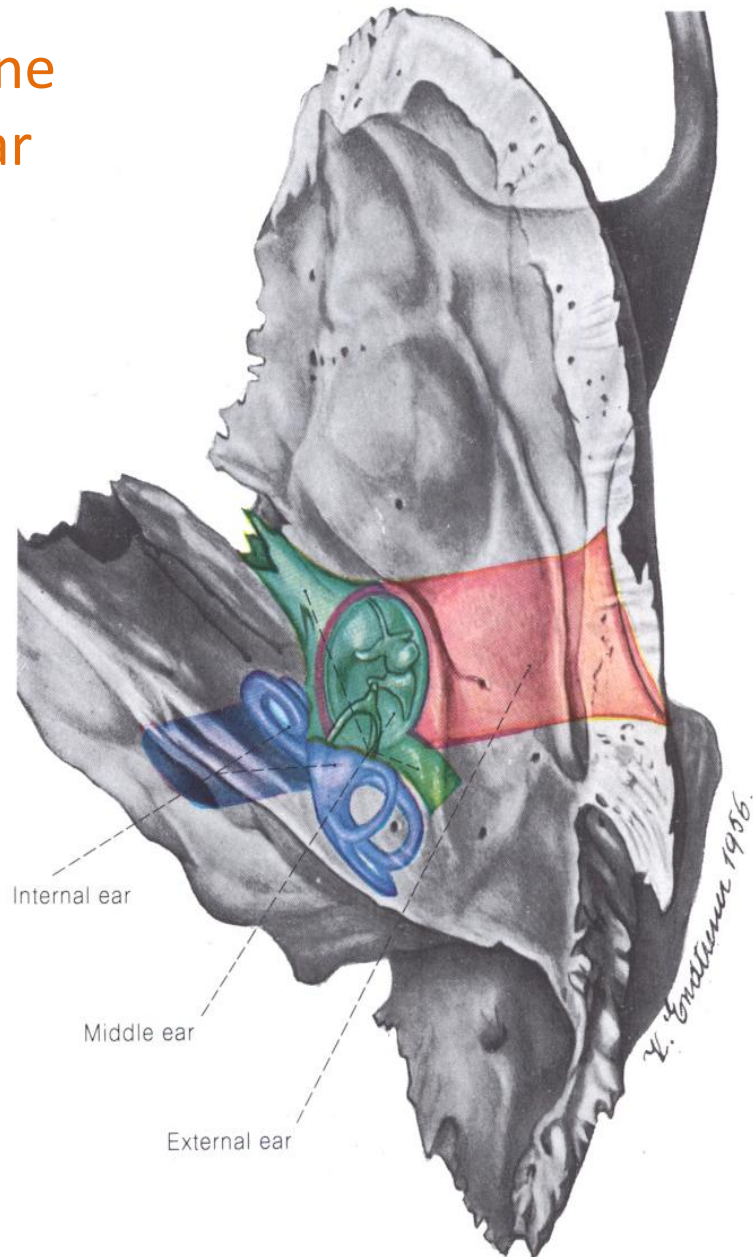
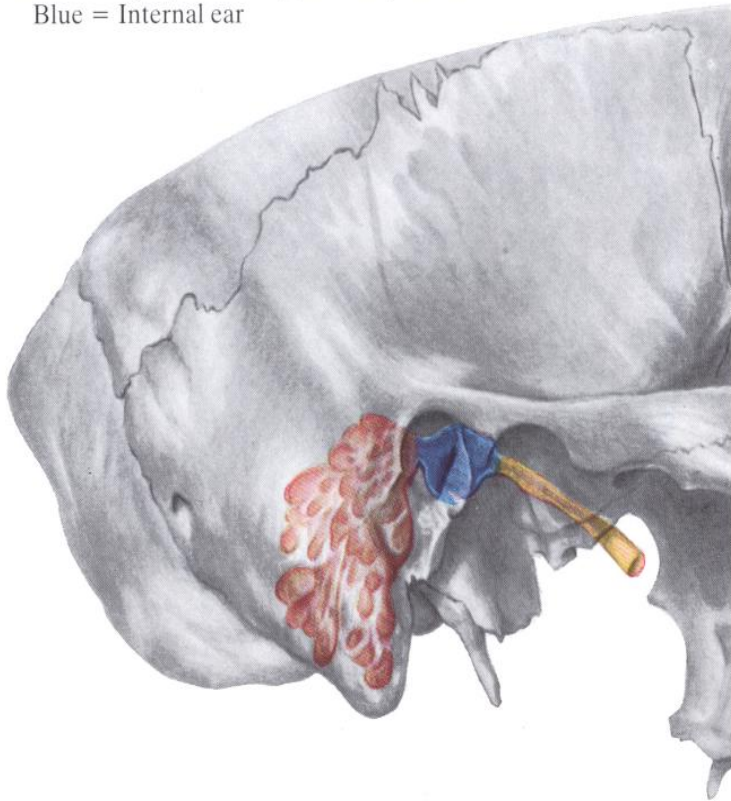


Prof Dr MTY



Petrous part of temporal bone encloses the parts of the ear

Red = Ext. acoustic meatus
Green = Tympanic cavity, auditory ossicles
Blue = Internal ear



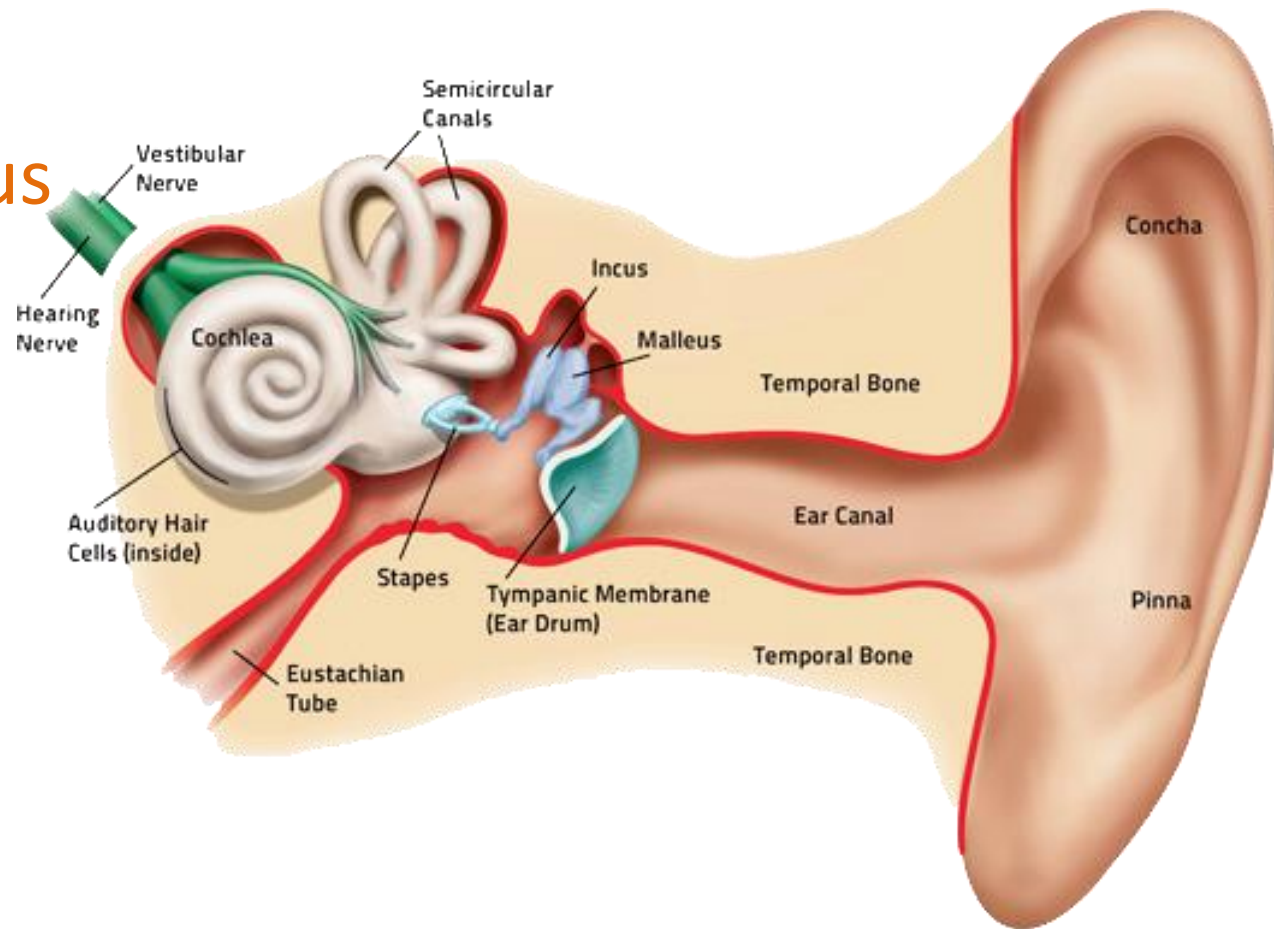
EXTERNAL EAR

Auricle

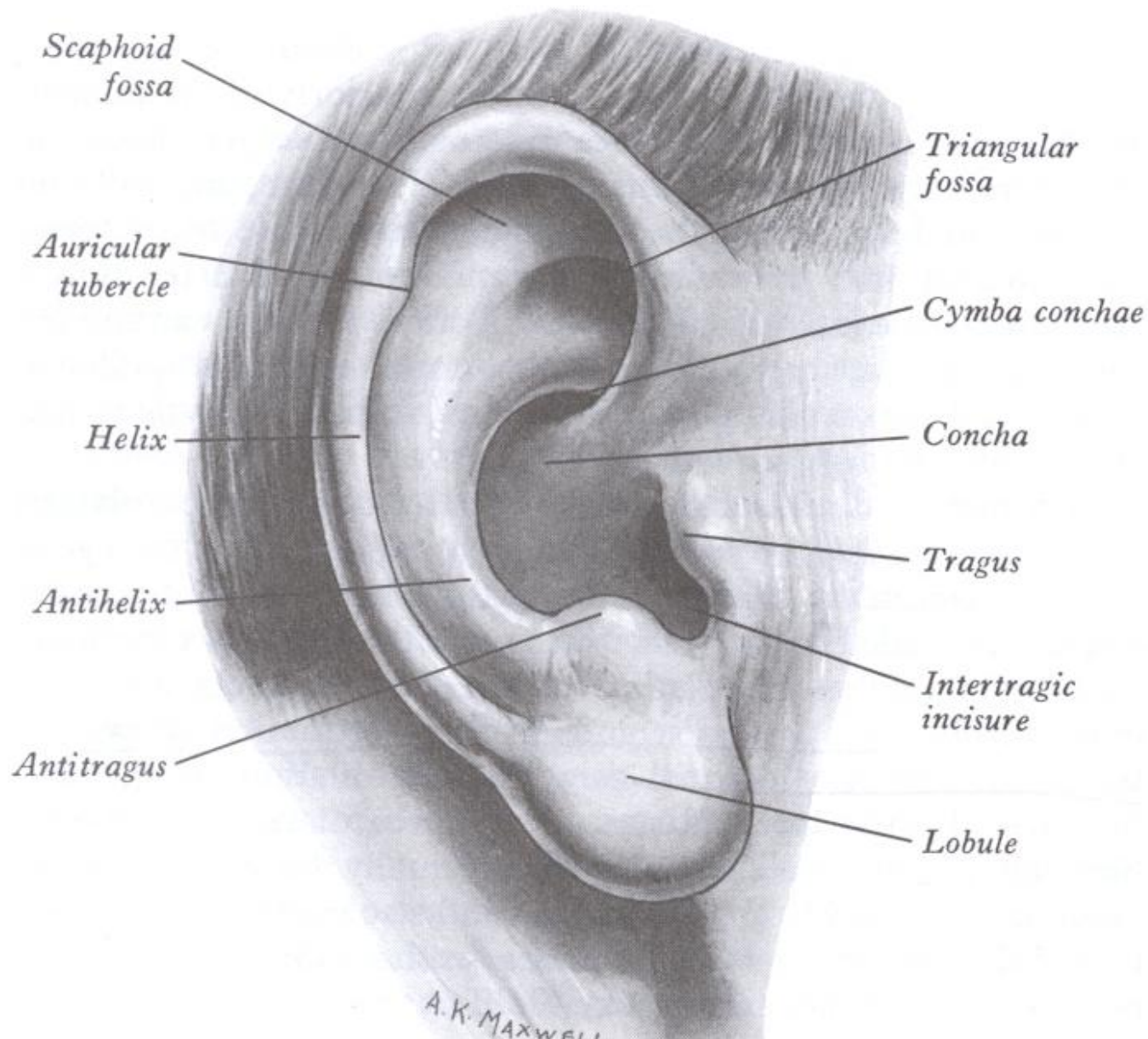
External
auditory meatus

MIDDLE EAR (Tympanic Cavity)

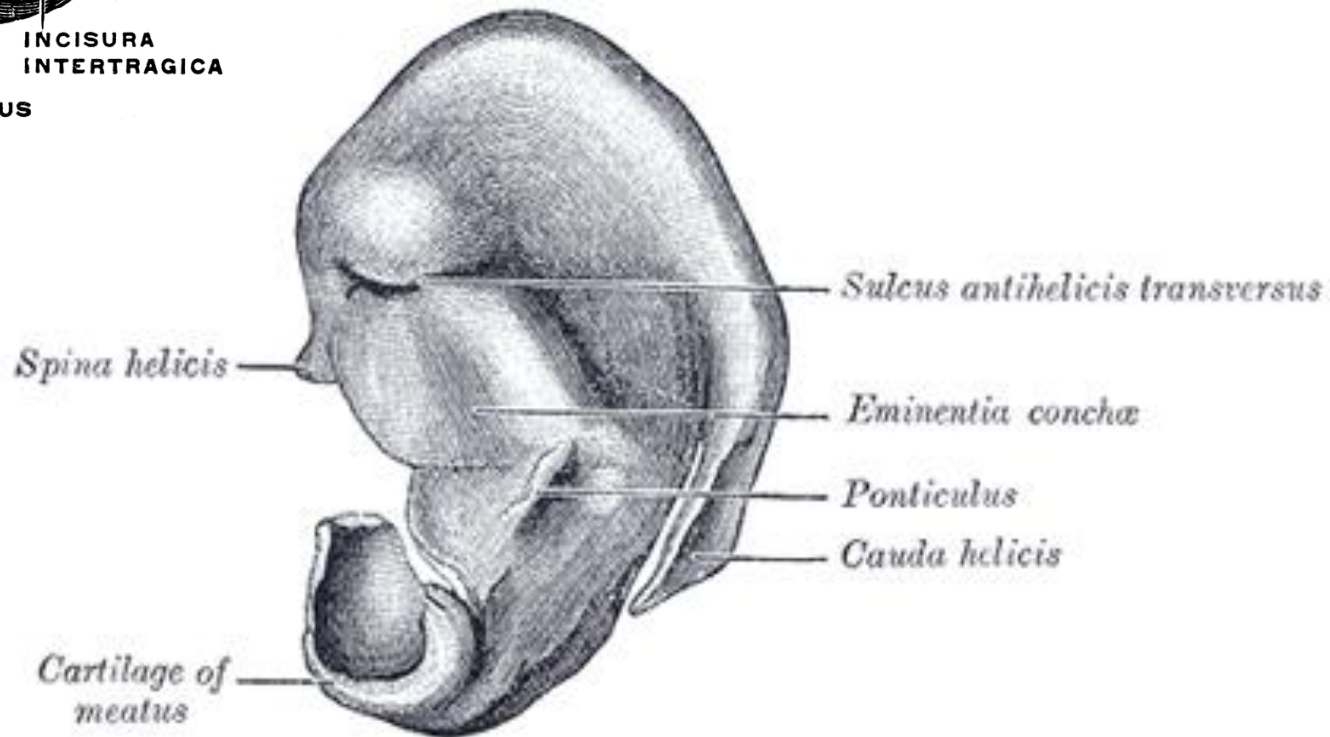
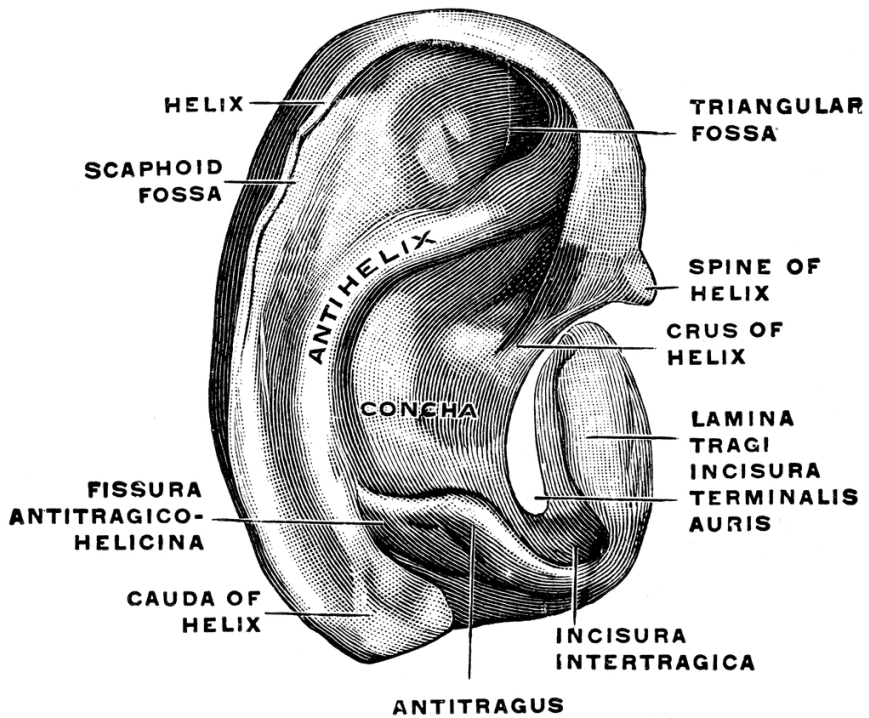
INNER EAR (Labyrinth)



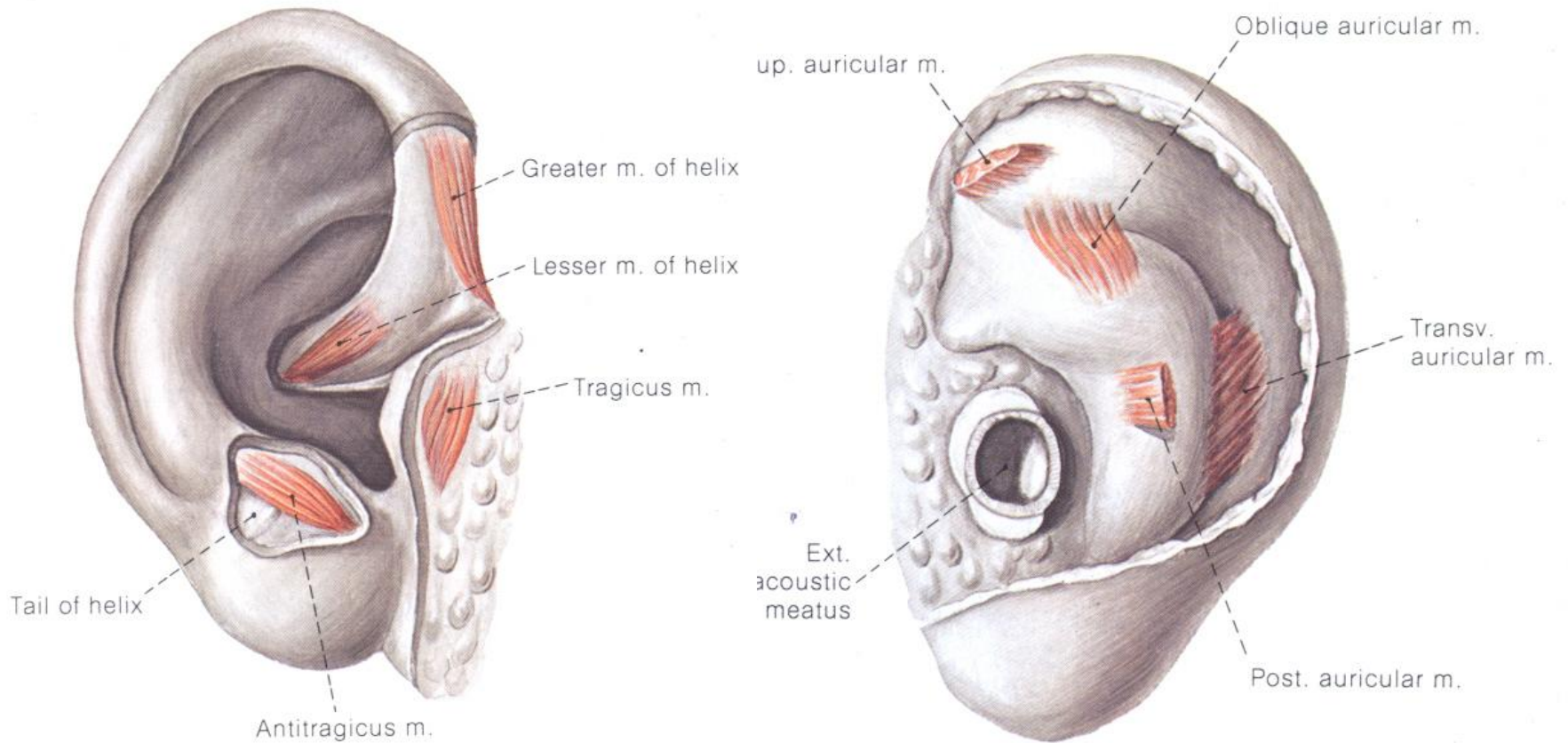
THE AURICLE



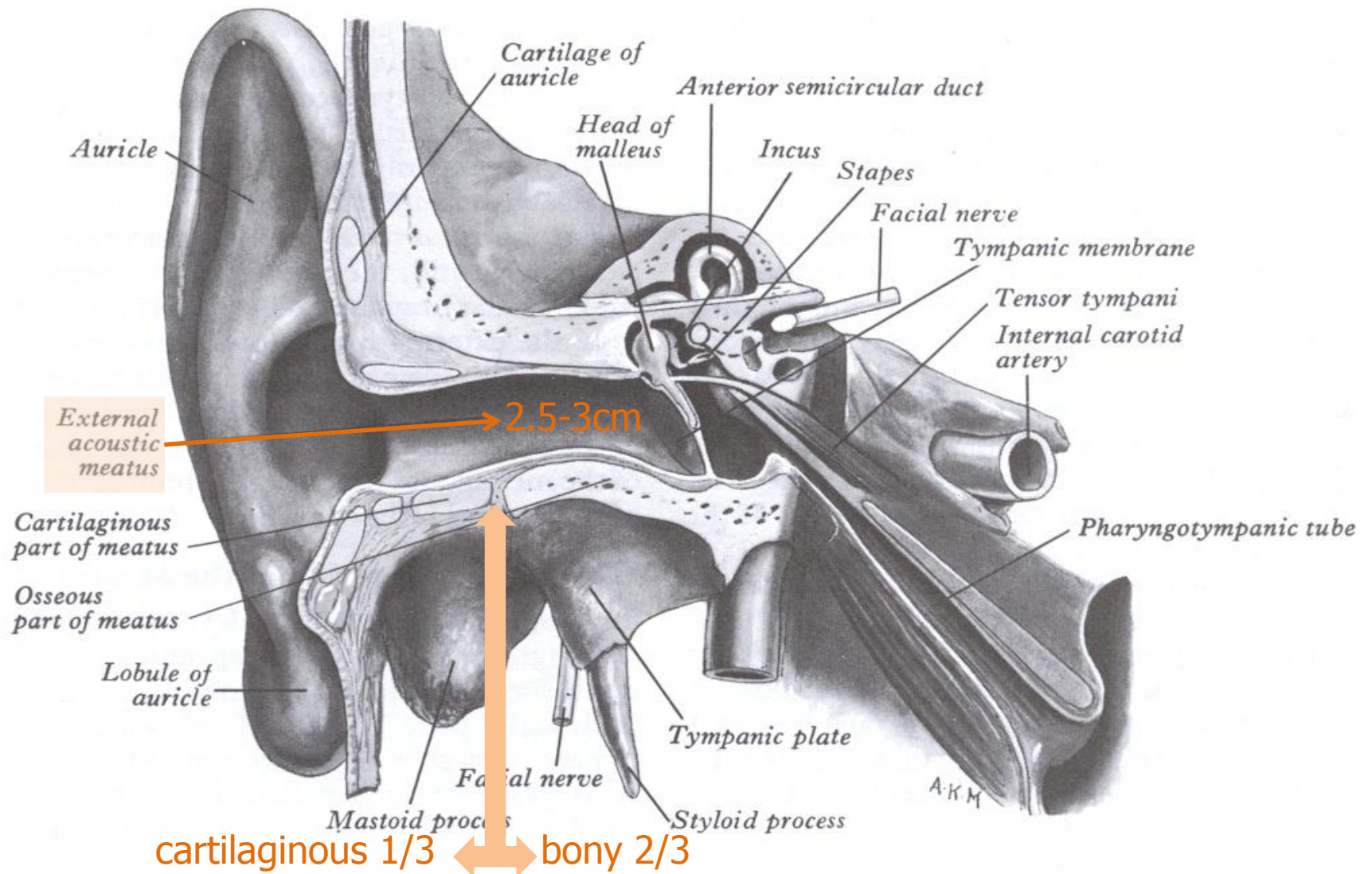
CARTILAGE OF THE AURICLE



INTRINSIC MUSCLES OF THE AURICLE



EXTERNAL ACOUSTIC MEATUS

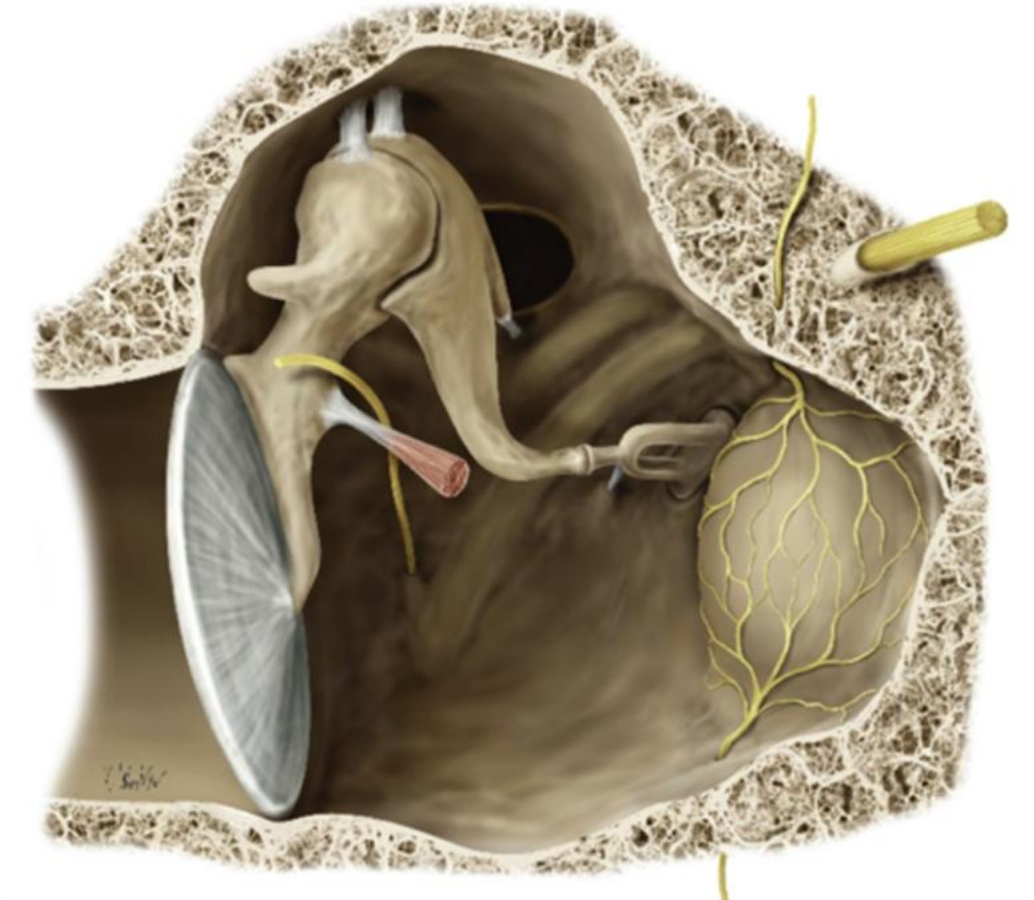


TYMPANIC CAVITY

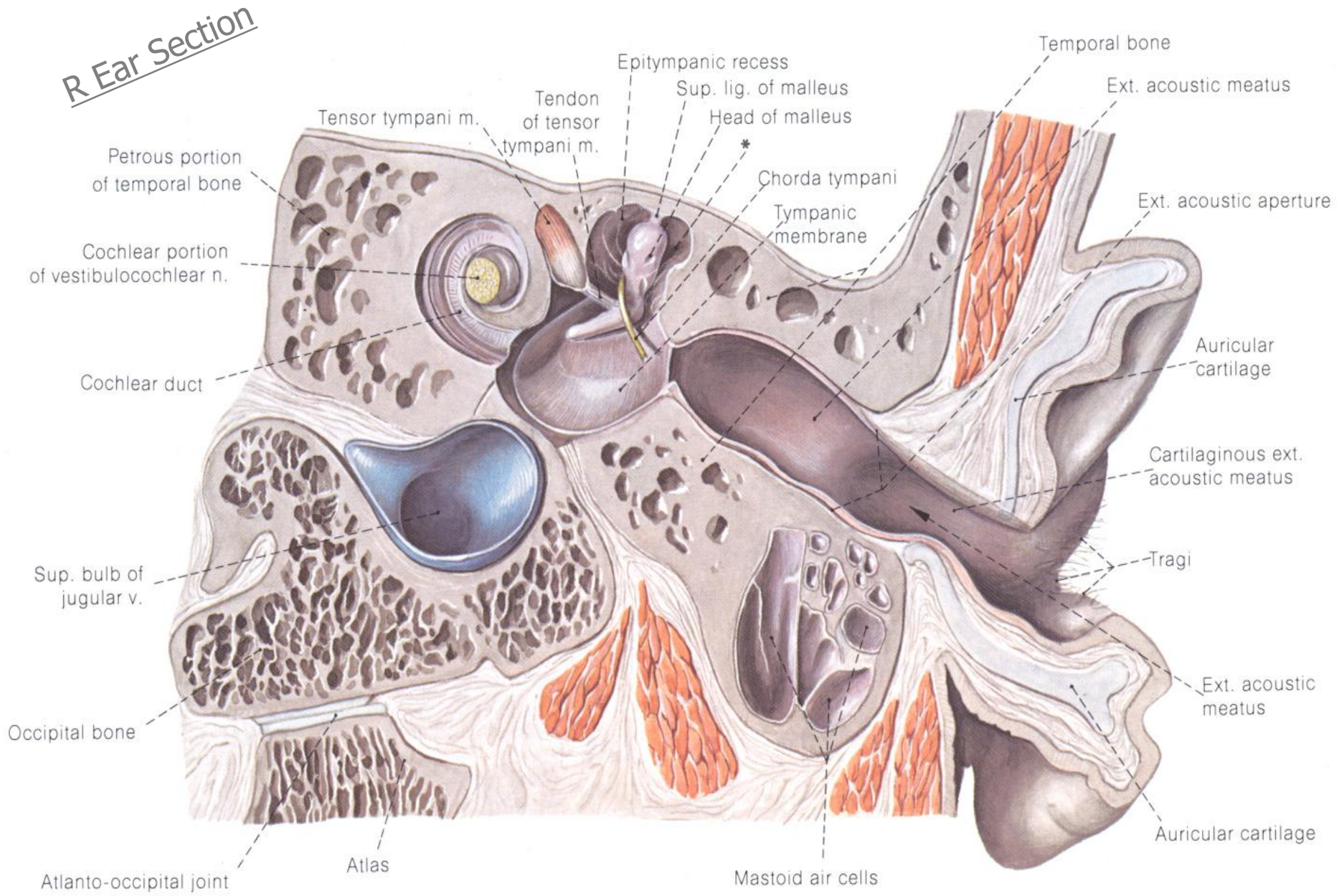
It is an irregular cavity within the temporal bone.

It is filled with air from the nasal pharynx through the auditory tube.

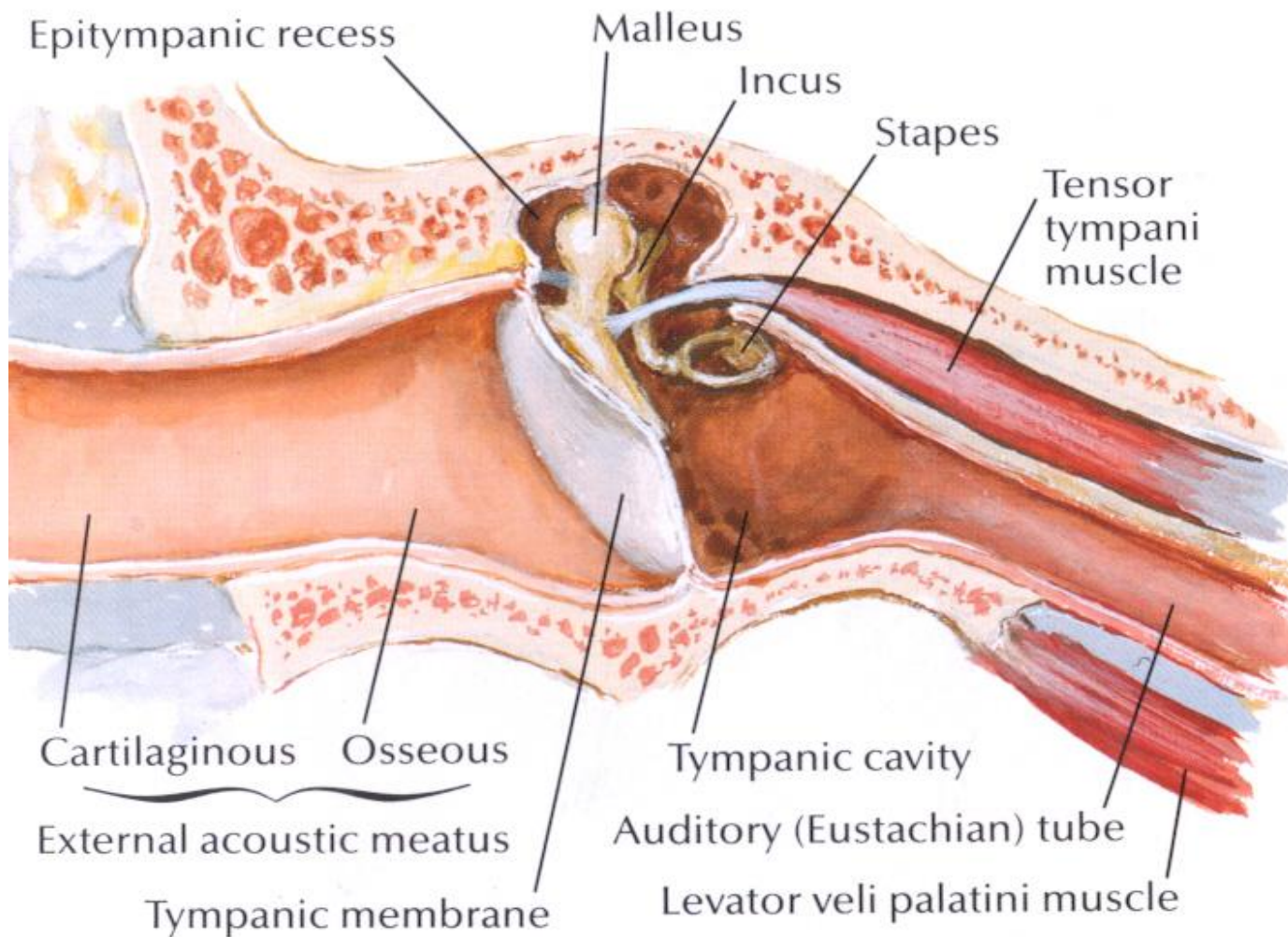
It contains ossicles forming a bridge bw the lateral and the medial walls



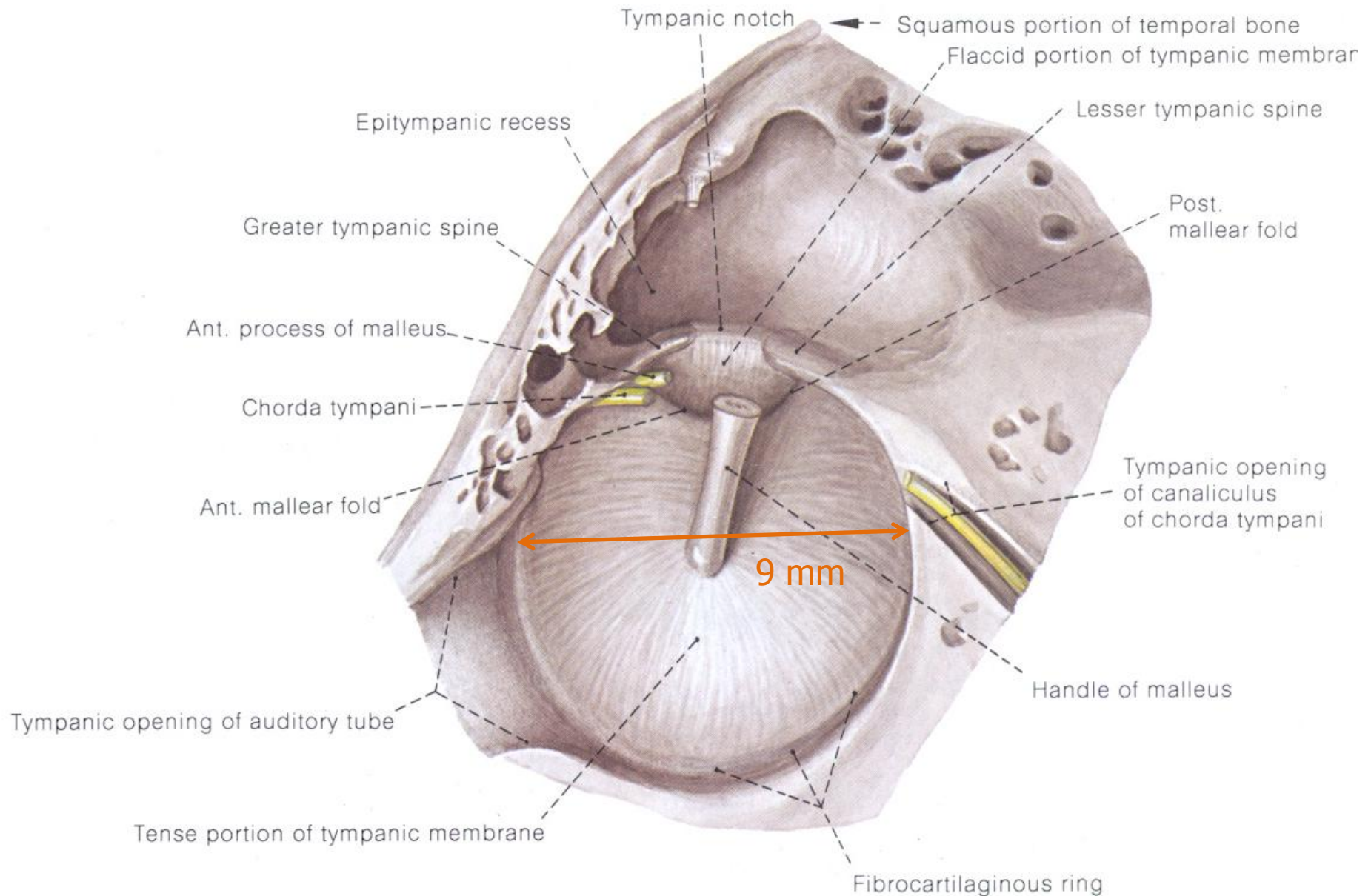
ROOF (TEGMEN TYMPANI) & FLOOR



LATERAL WALL

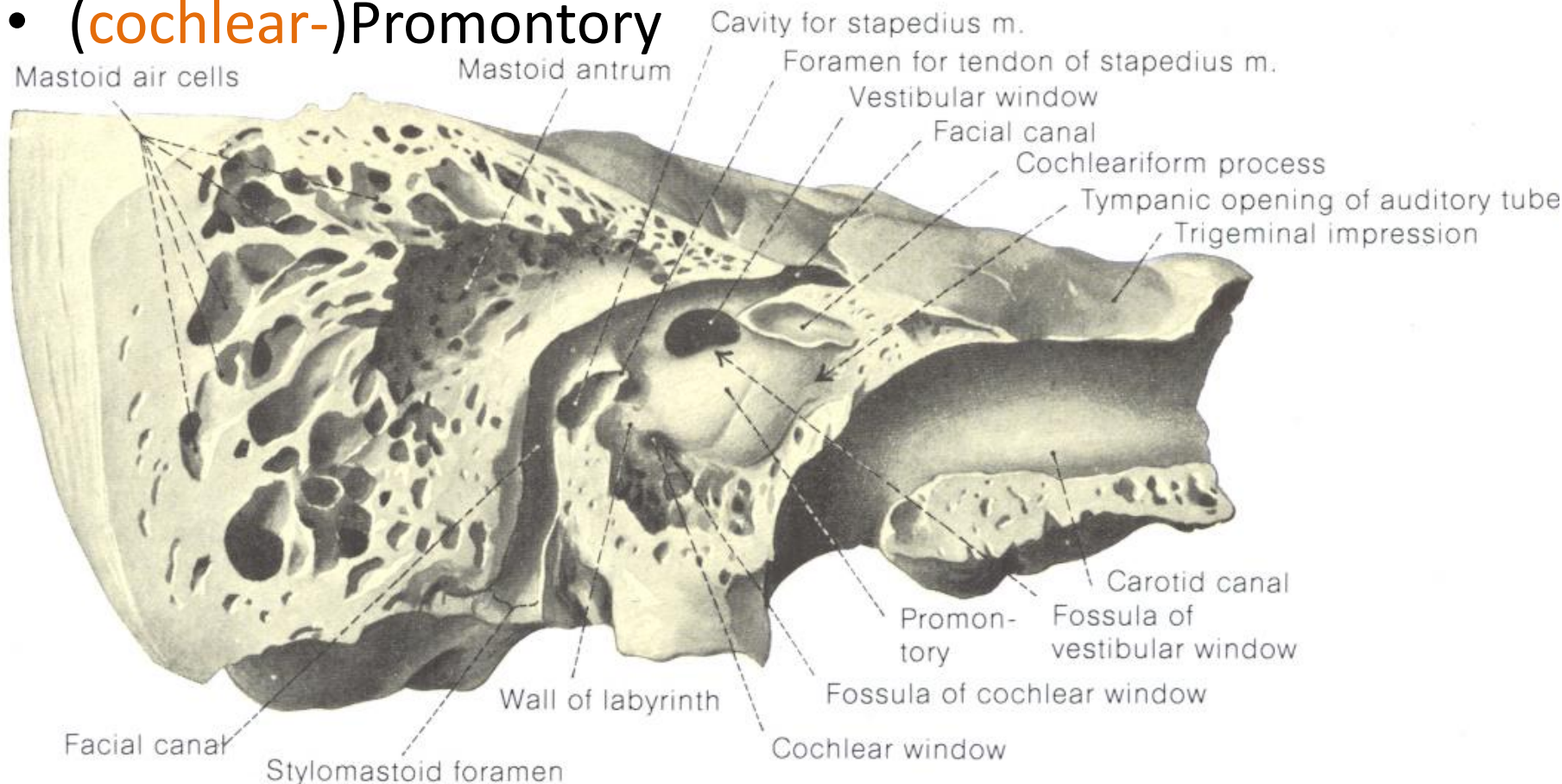


TYMPANIC MEMBRANE



MEDIAL WALL

- Prominence of facial canal
- vestibular window/oval window
- cochlear window/round window
- (cochlear-)Promontory

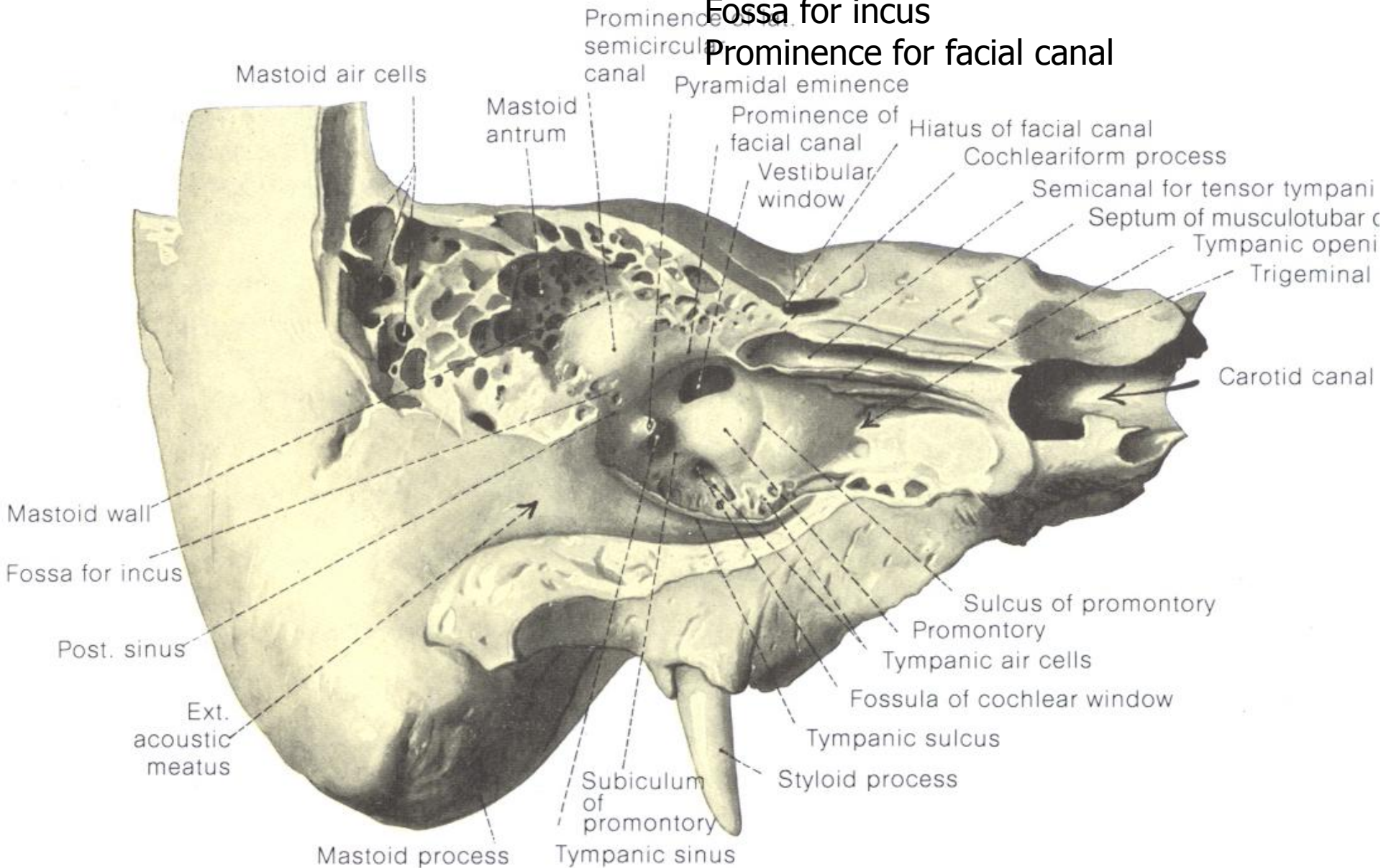


POSTERIOR WALL

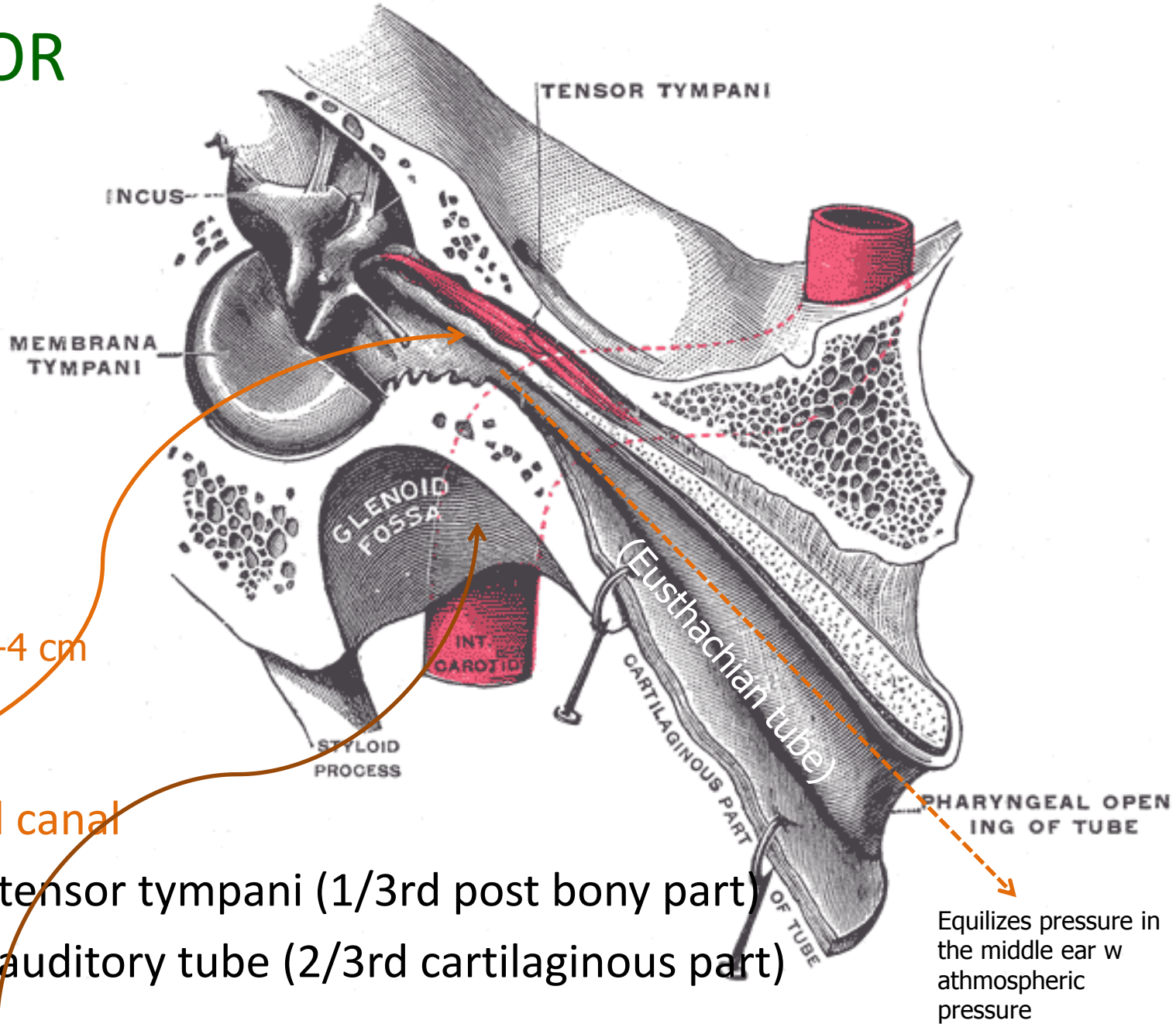
Entrance (additus) to mastoid antrum
Pyramidal eminence (contains stapedius m)

Fossa for incus

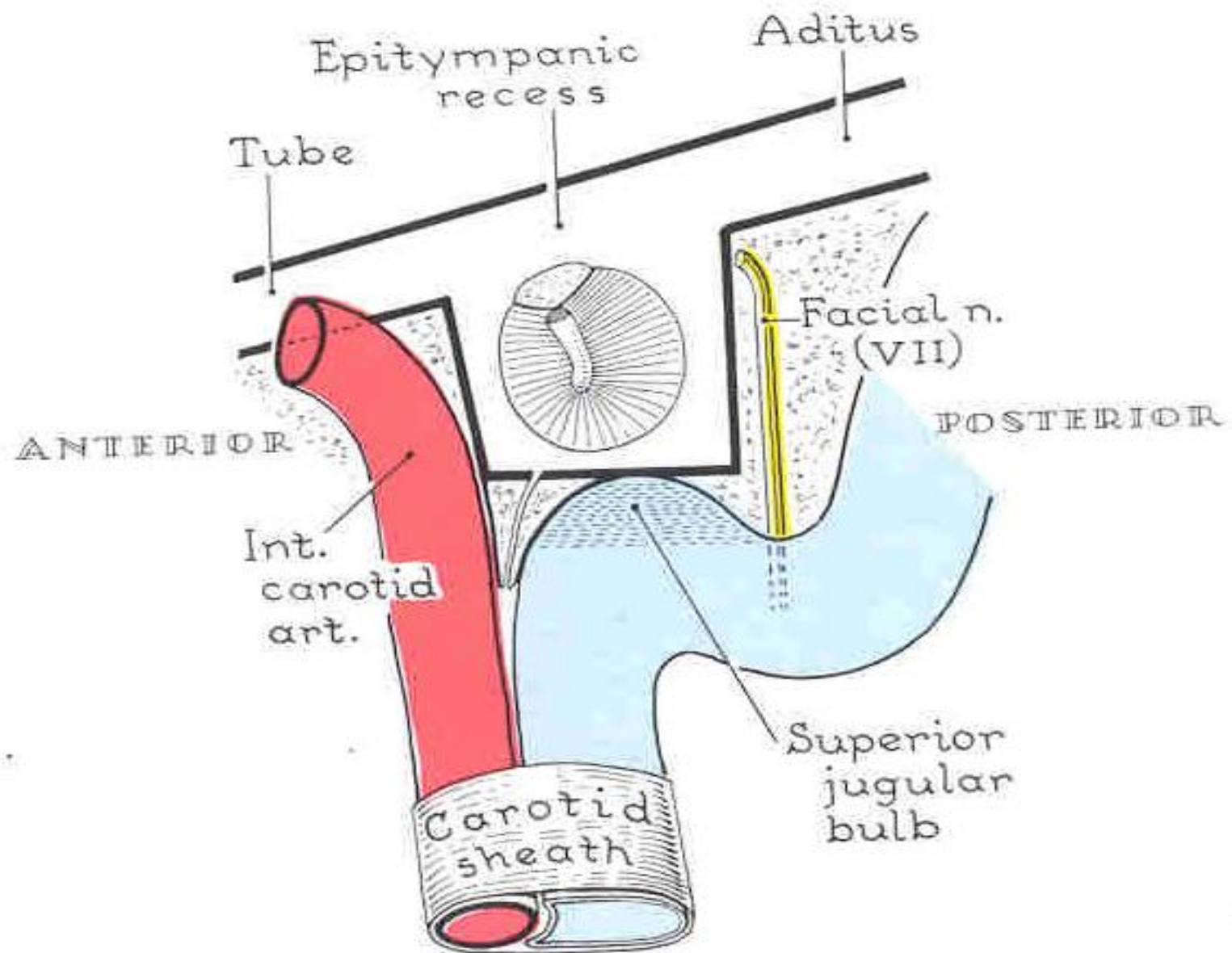
Prominence for facial canal



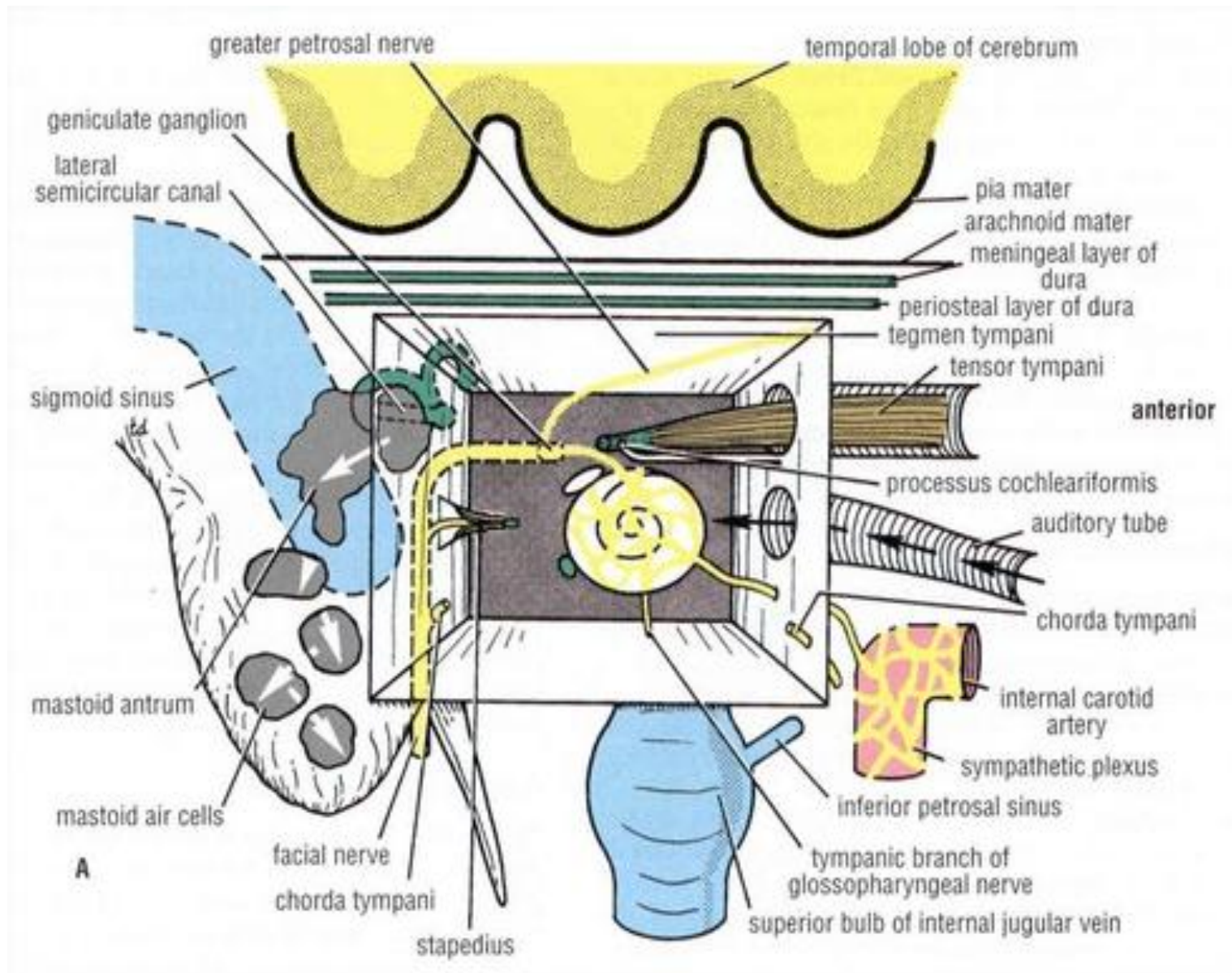
ANTERIOR WALL

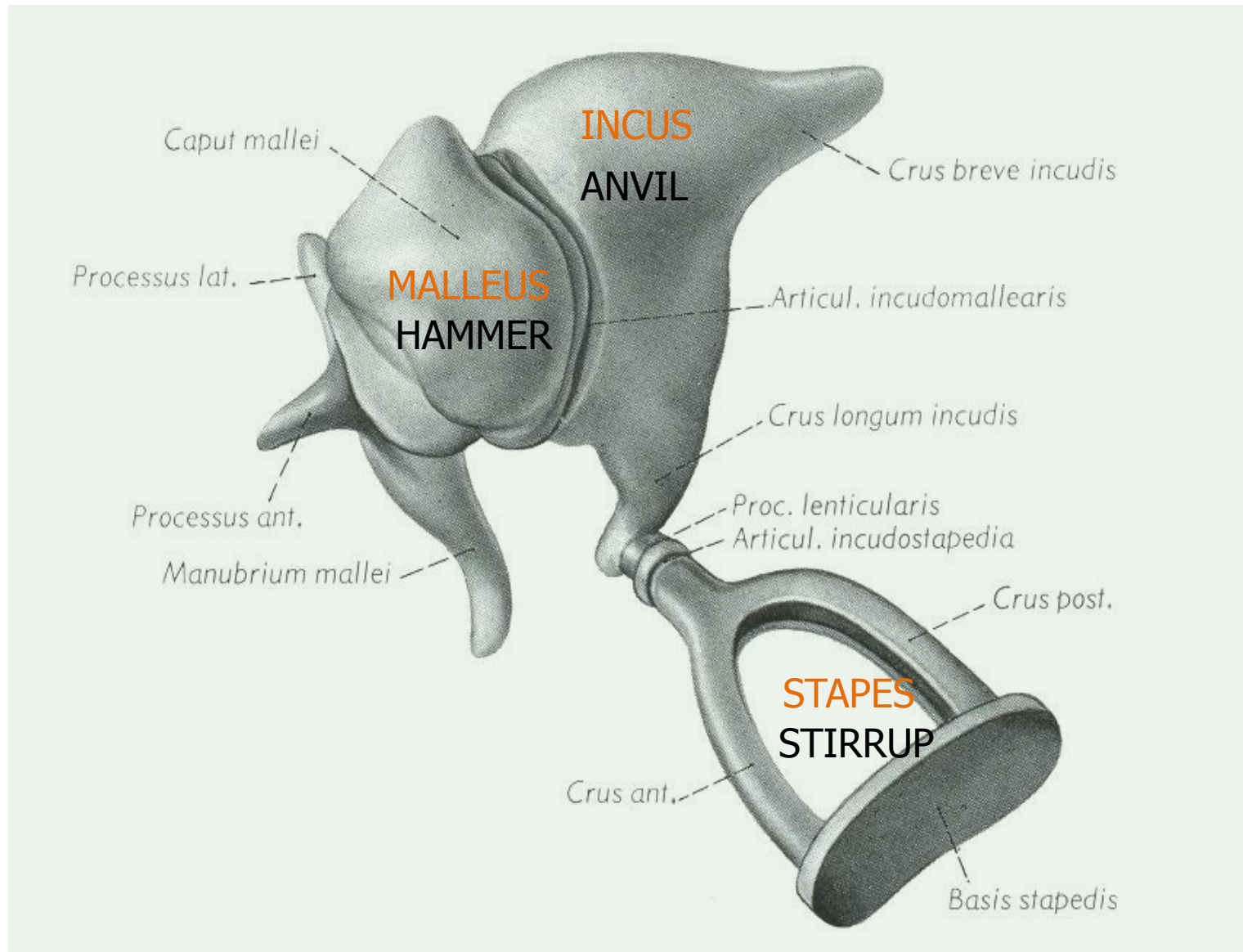


Equilizes pressure in the middle ear w atmospheric pressure



BOX OF MIDDLE EAR (TYMPANIC CAVITY)



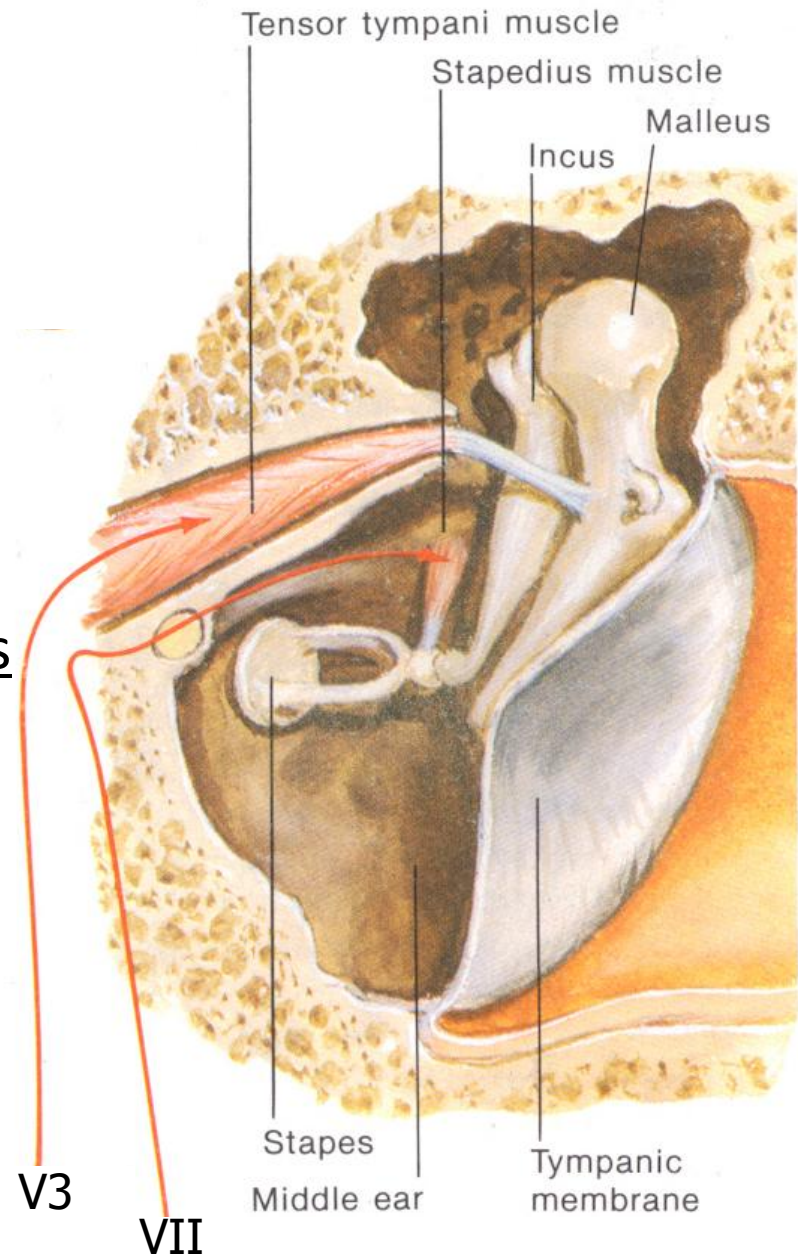


MUSCLES WITHIN THE TYMPANIC CAVITY

TENSOR TYMPANI (CN V)

STAPEDIUS M (CN VII)

FUNCTION (for both muscles):
Dampening the large vibrations
to prevent hyperacusis



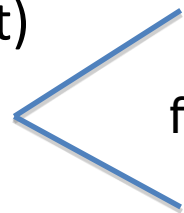
INNER EAR -VESTIBULOCOCHLEAR ORGAN

☀️ BONY LABYRINTH-lined w periosteum

Semicircular canals (superior-or anterior vertical, lateral-or horizontal, posterior vertical)

Cochlea

Vestibule (central part)



filled with **perilymph** (similar to CSF)

☀️ MEMBRANOUS LABYRINTH-

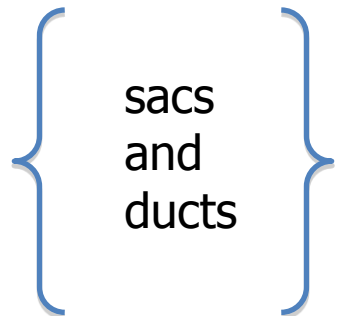
Utricle (larger sac)

Sacculle

Semicircular ducts

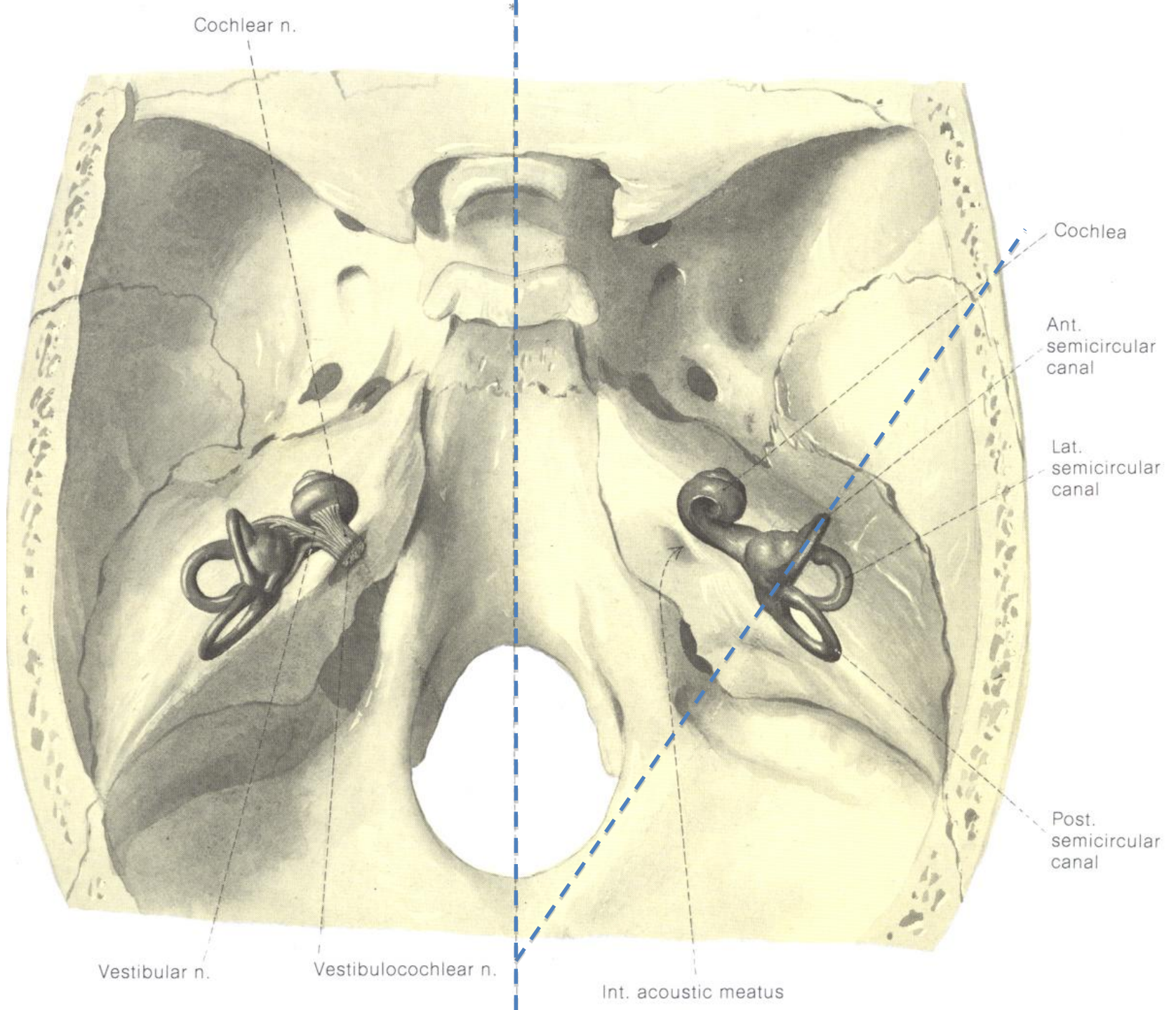
Cochlear duct

Endolymphatic sac



sacs and ducts

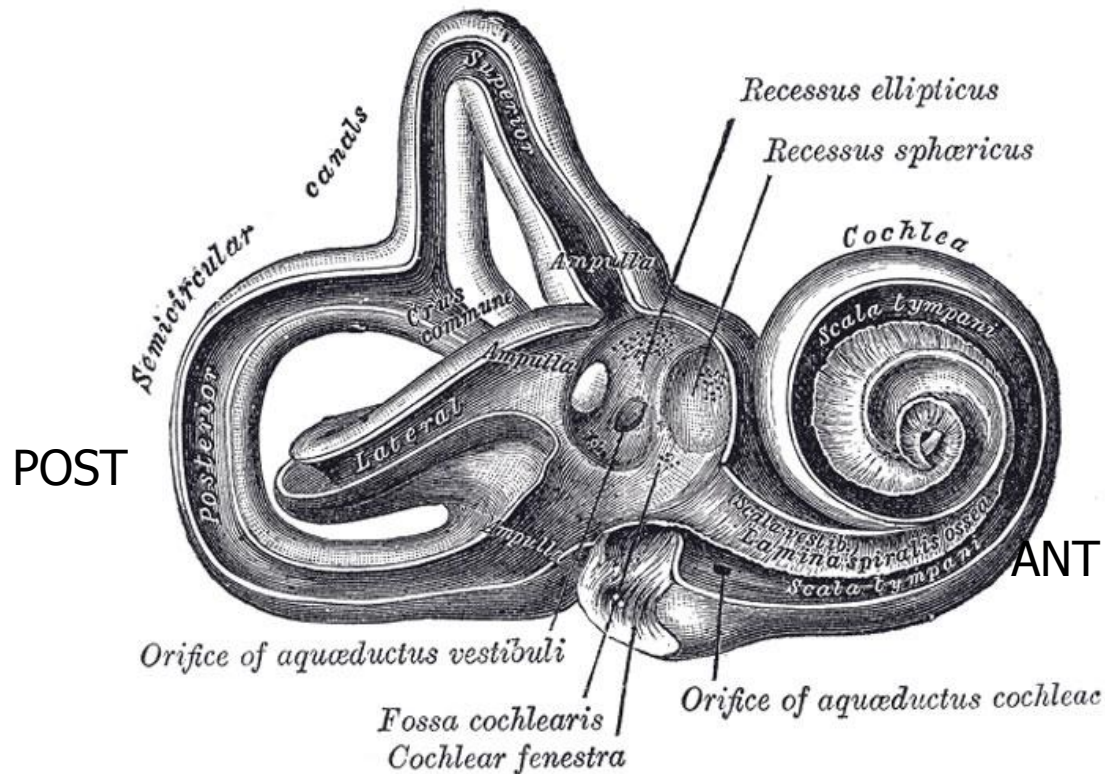
filled with **endolymph**

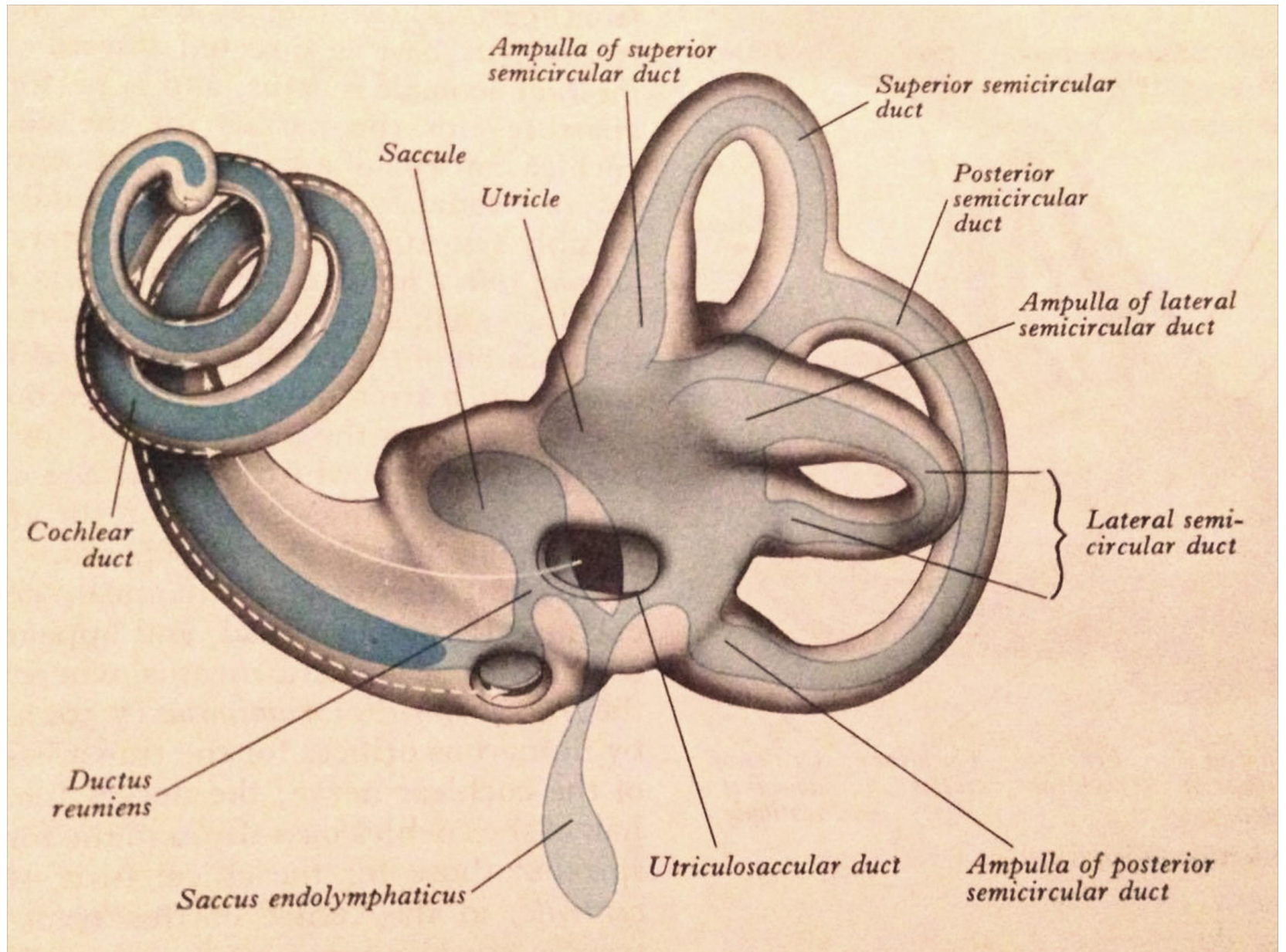


VESTIBULE

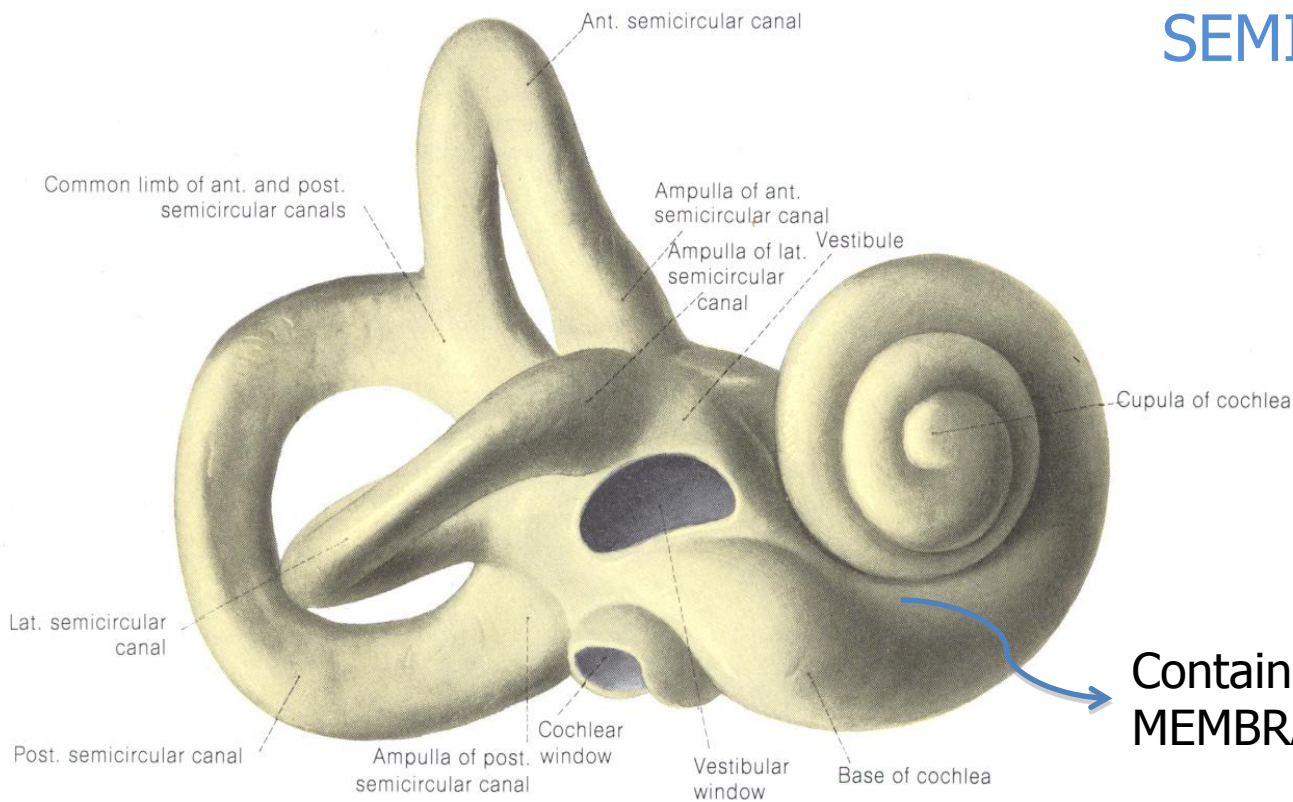
Contains utricle (in elliptical recess) and saccule (in spherical recess): parts of organ of balance

MEMBRANOUS LABYRINTH





SEMICIRCULAR CANALS



Contains **SEMICIRCULAR DUCS**
MEMBRANOUS LABYRYNTH

Vestibular Receptors

Vestibular ganglion

Vestibular and cochlear divisions of vestibulocochlear n.

Maculae

Sacculae

Utricule

Cochlear duct (scala media)

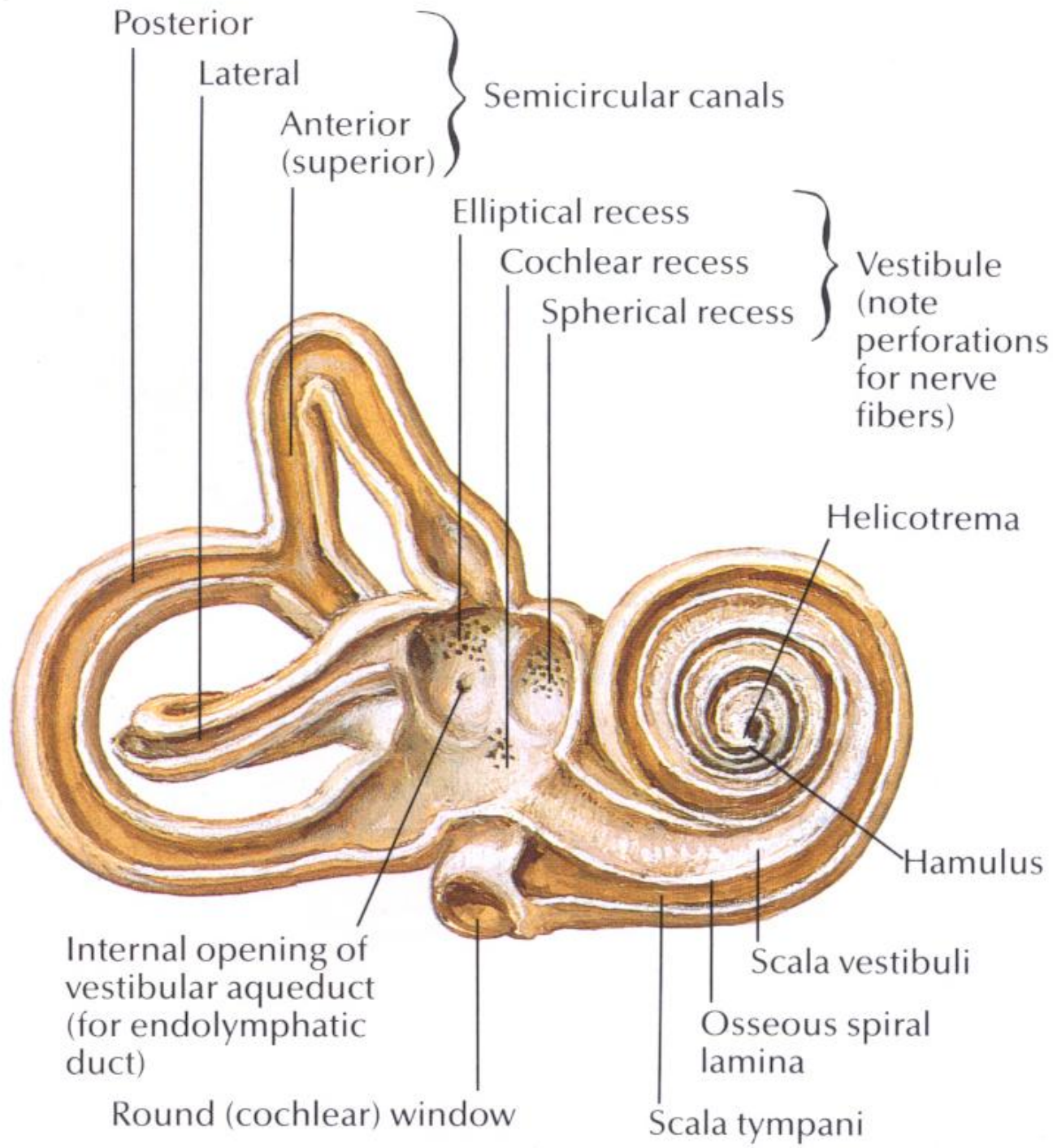
A. Membranous labyrinth

Superior semi-circular canal

Cristae within ampullae

Horizontal semi-circular canal

Posterior semi-circular canal



COCHLEA

Anterior part of the labyrinth-

2 ½ turns around **modiolus** (large basal turn forming the promontory)

Spiral canal of the cochlea is divided into three parts.

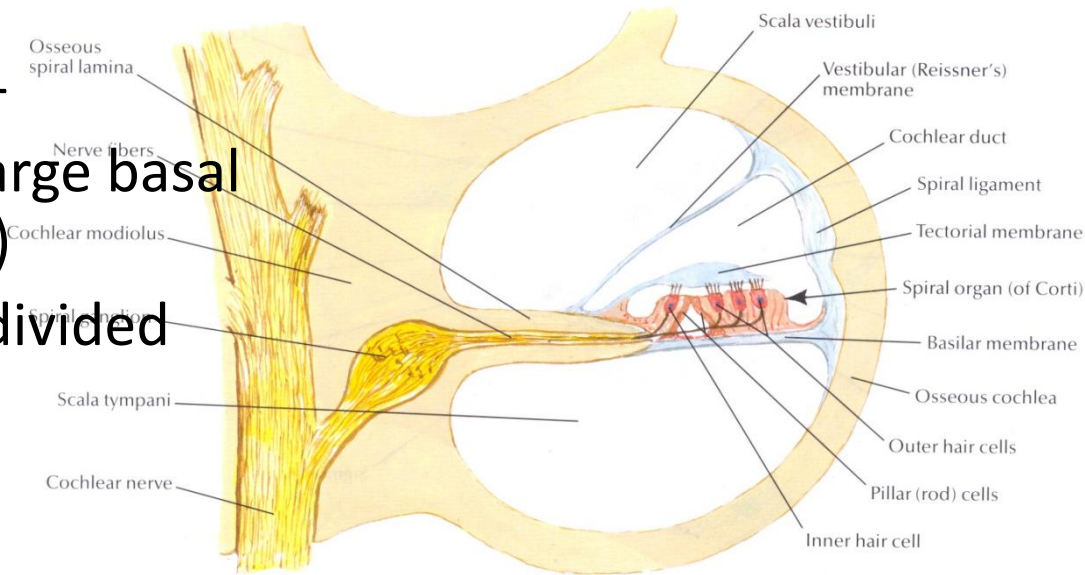
scala vestibuli

Scala media (cochlear duct)

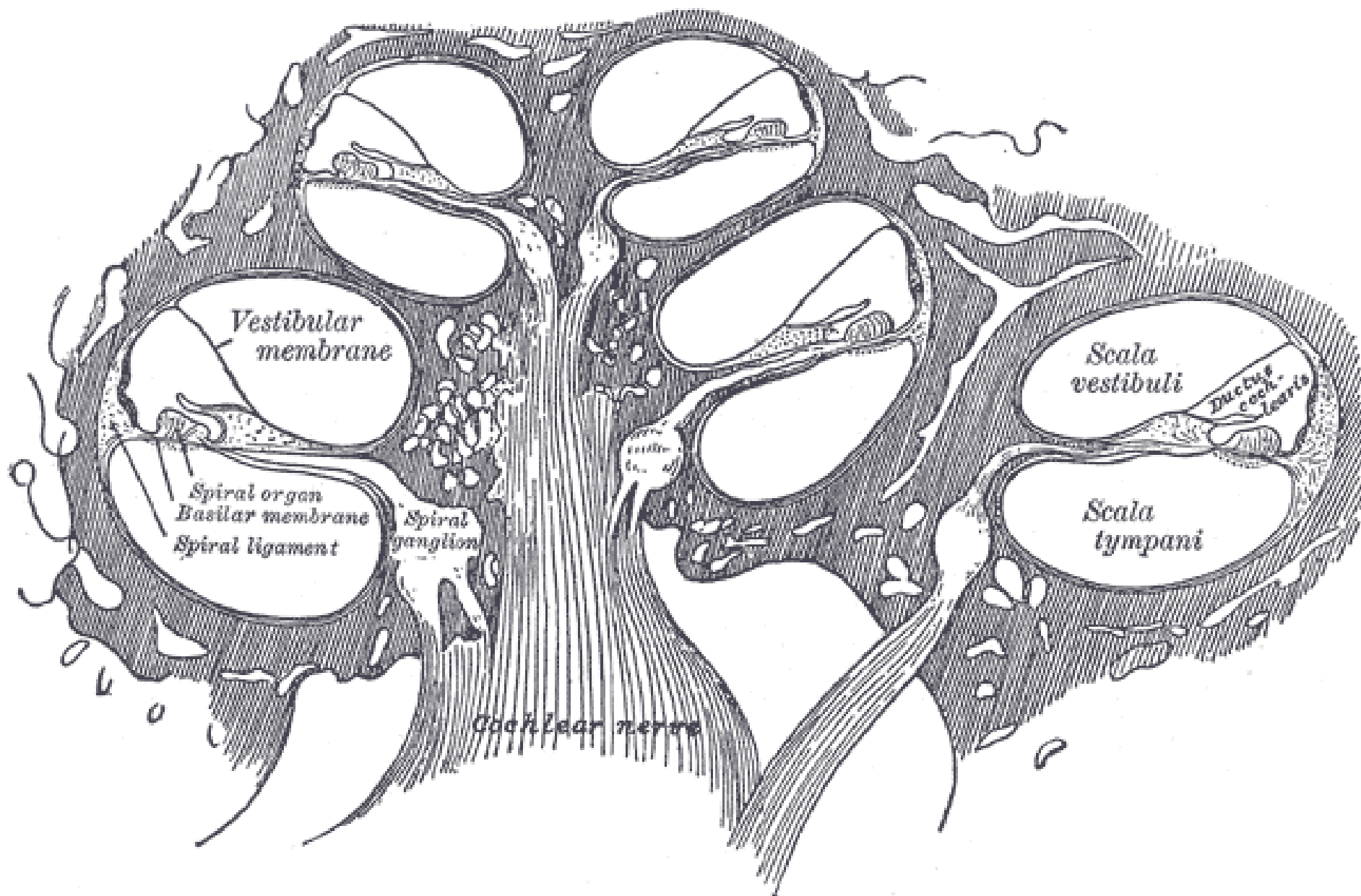
scala tympani

A spiral canal winds around the modiolus and it is called the **spiral canal of the modiolus**. It contains the **spiral or cochlear ganglion** (1st ganglion of the **auditory pw**); peripheral fibers reach to the organ of Corti (spiral organ) that is responsible with hearing

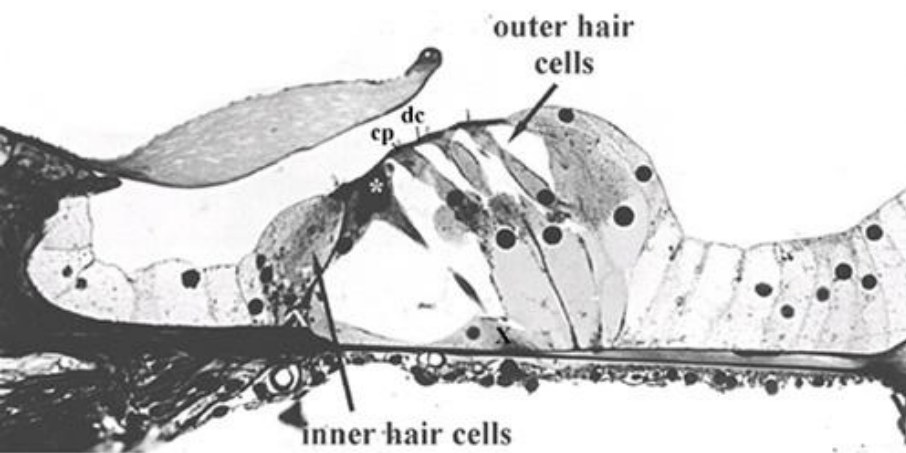
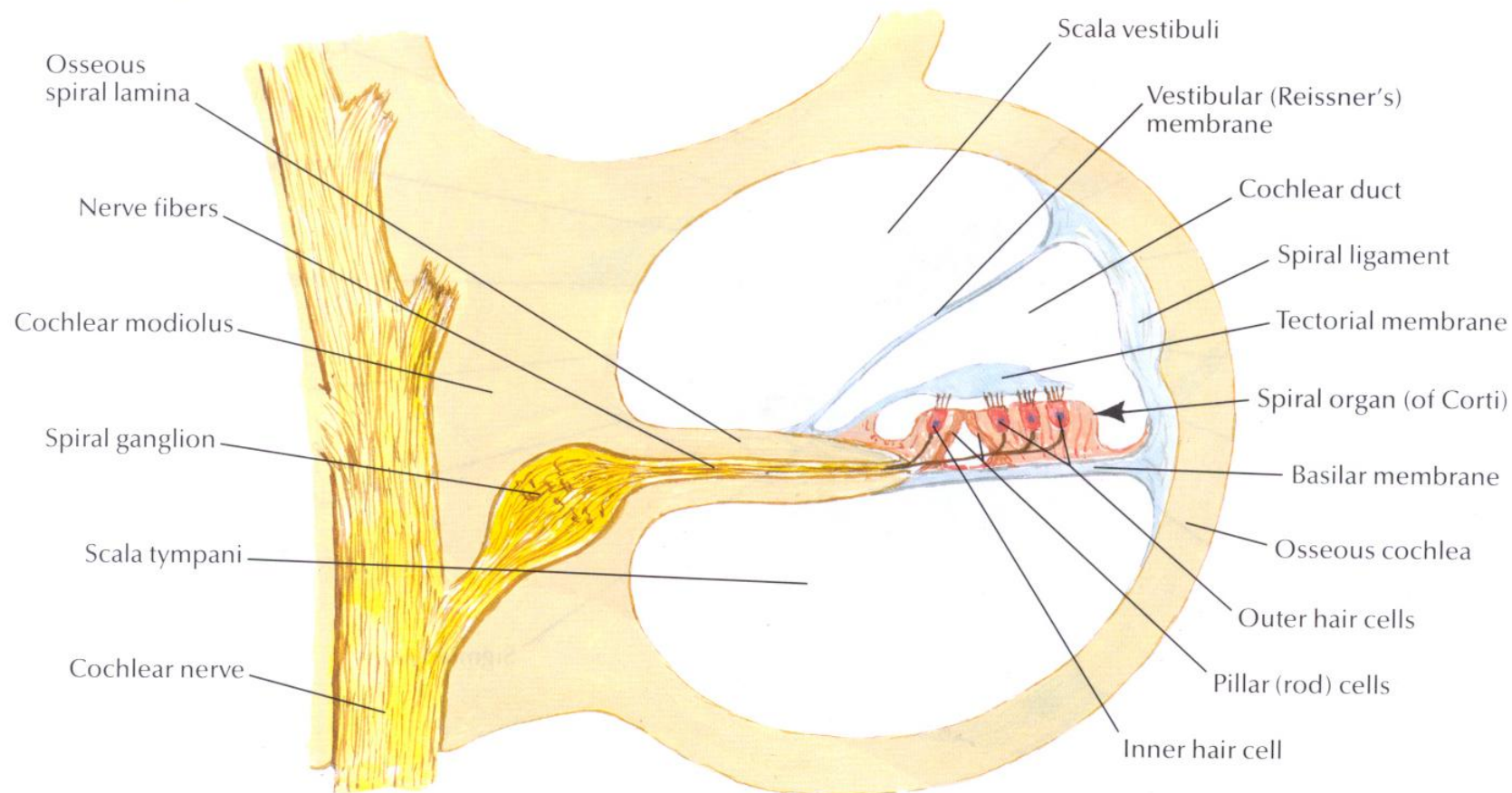
Section through turn of cochlea



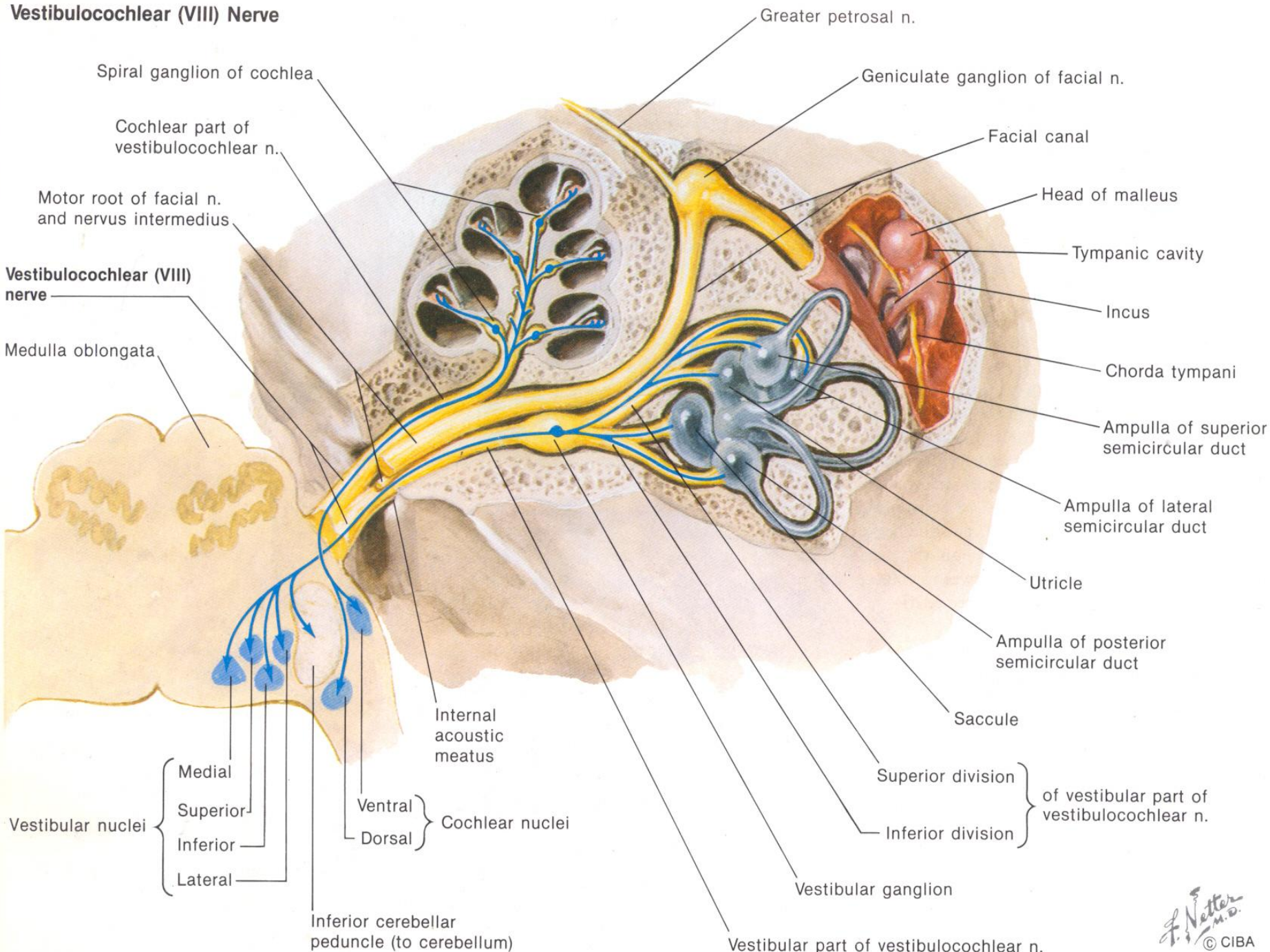
These two interconnect at the apex of the cochlea at the **helicotrema** (passageway)



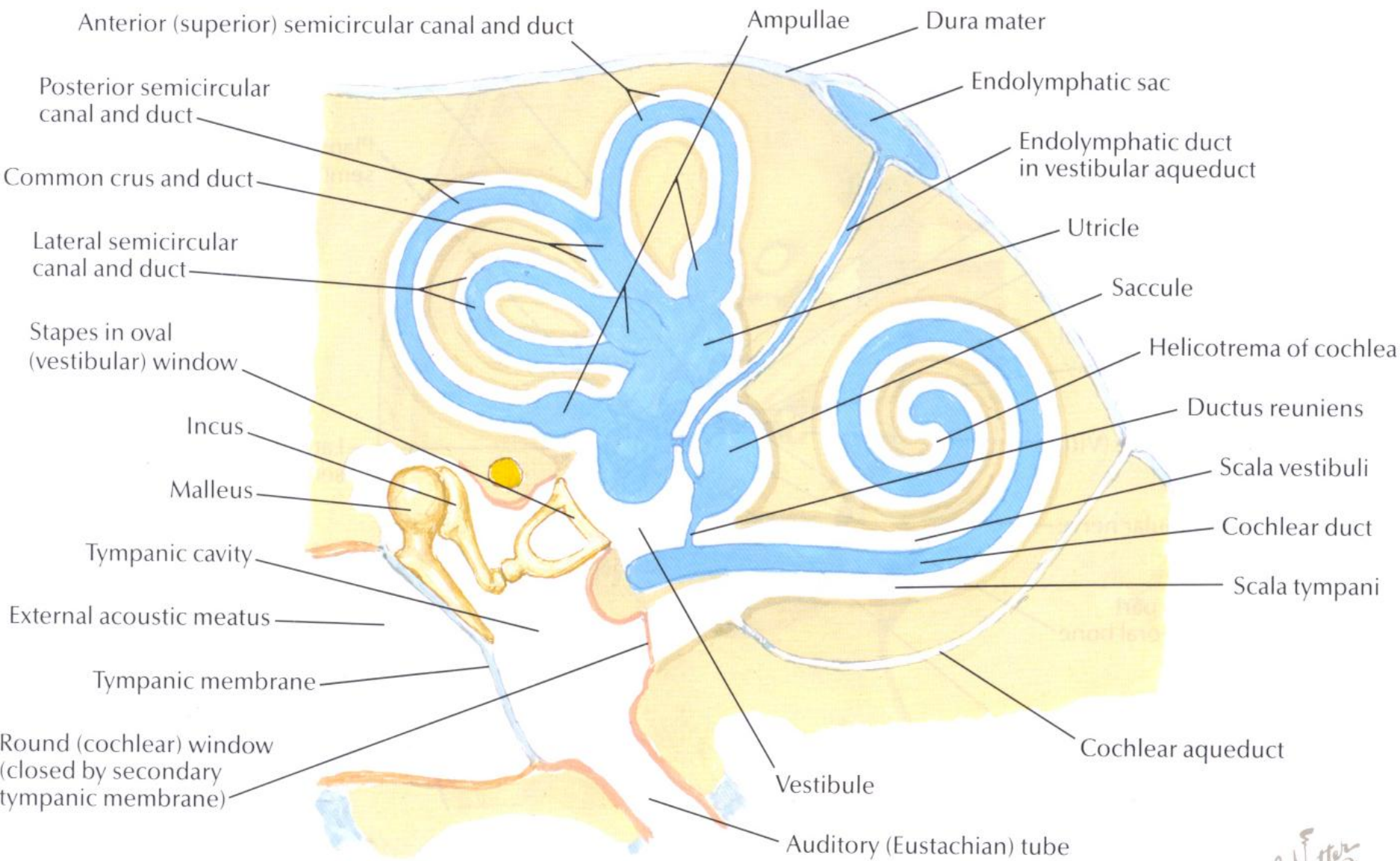
Section through turn of cochlea



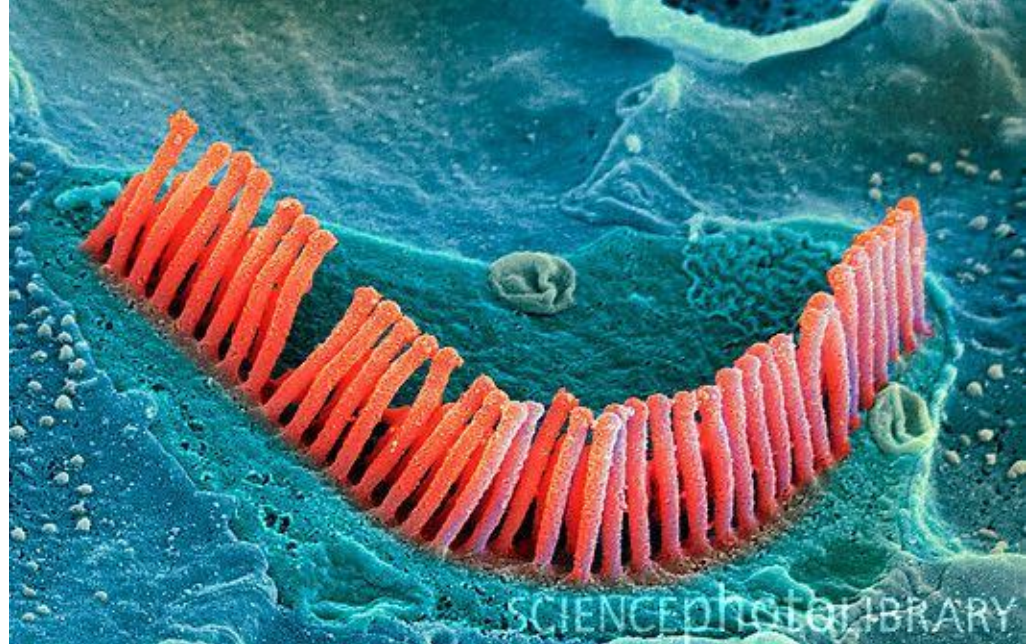
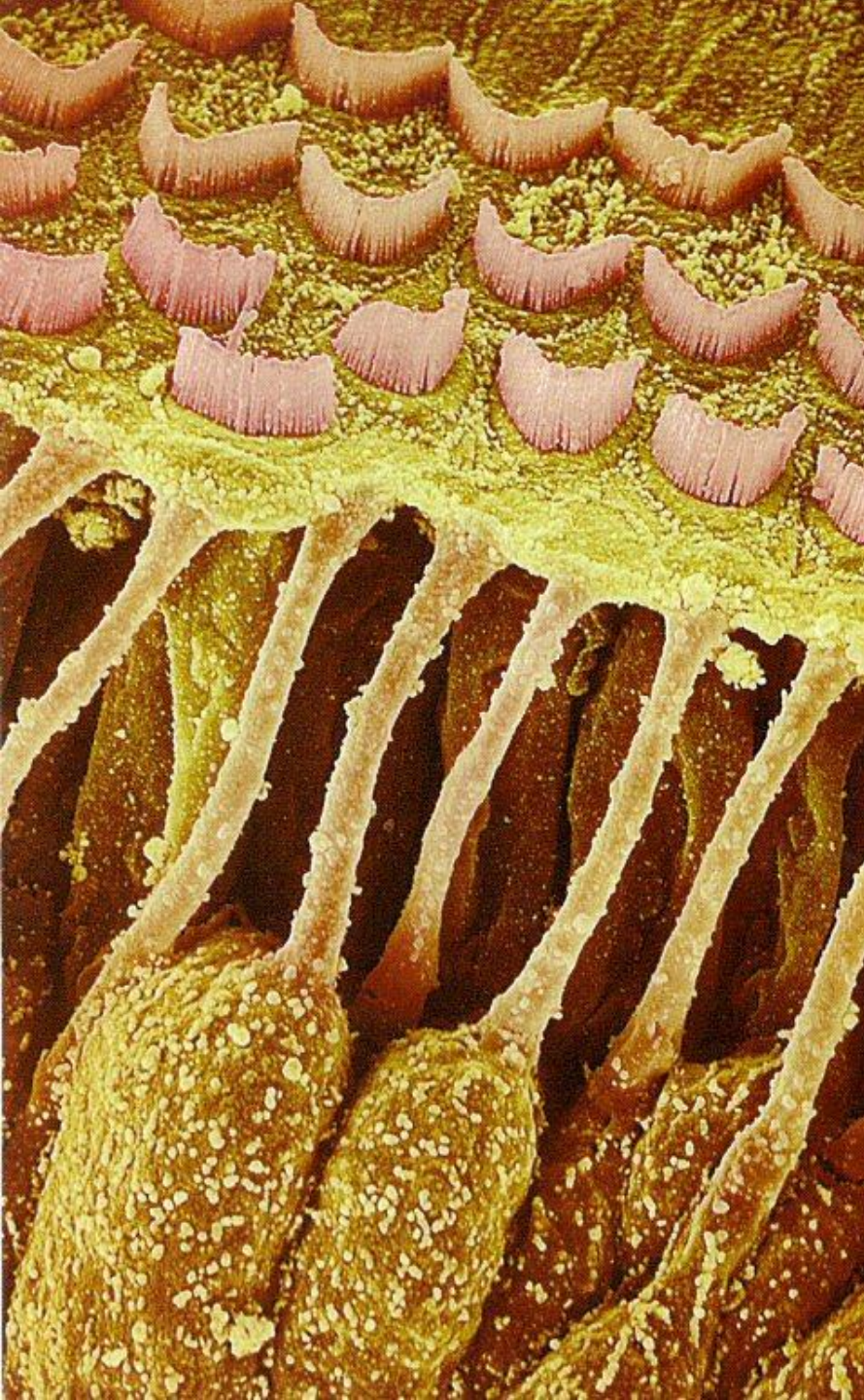
Vestibulocochlear (VIII) Nerve



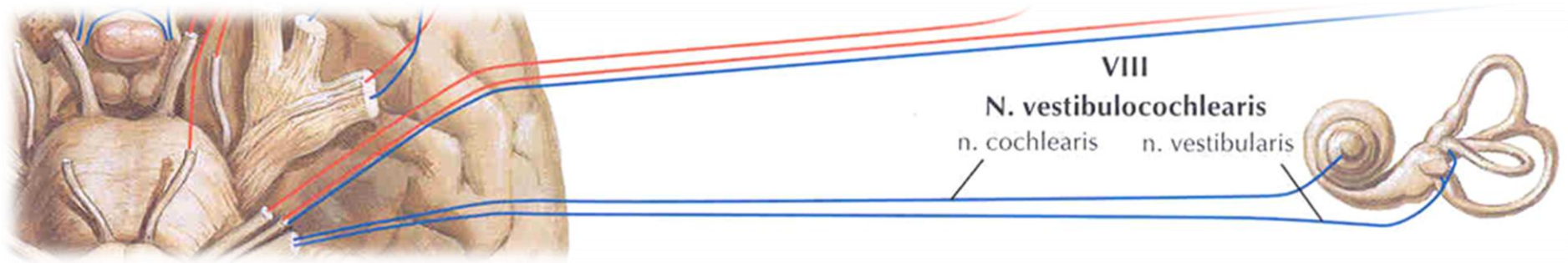
Osseous and membranous labyrinths: schema



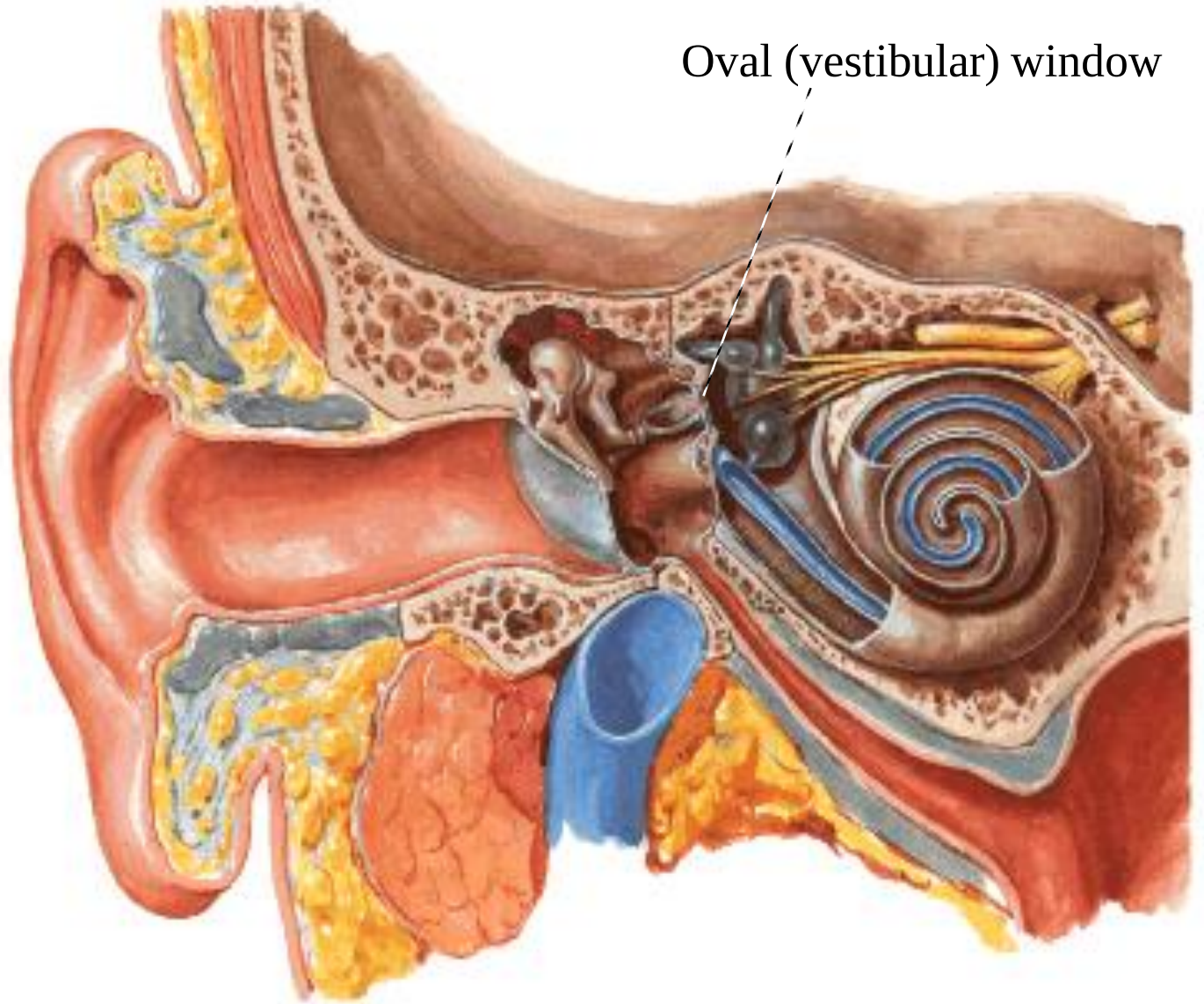




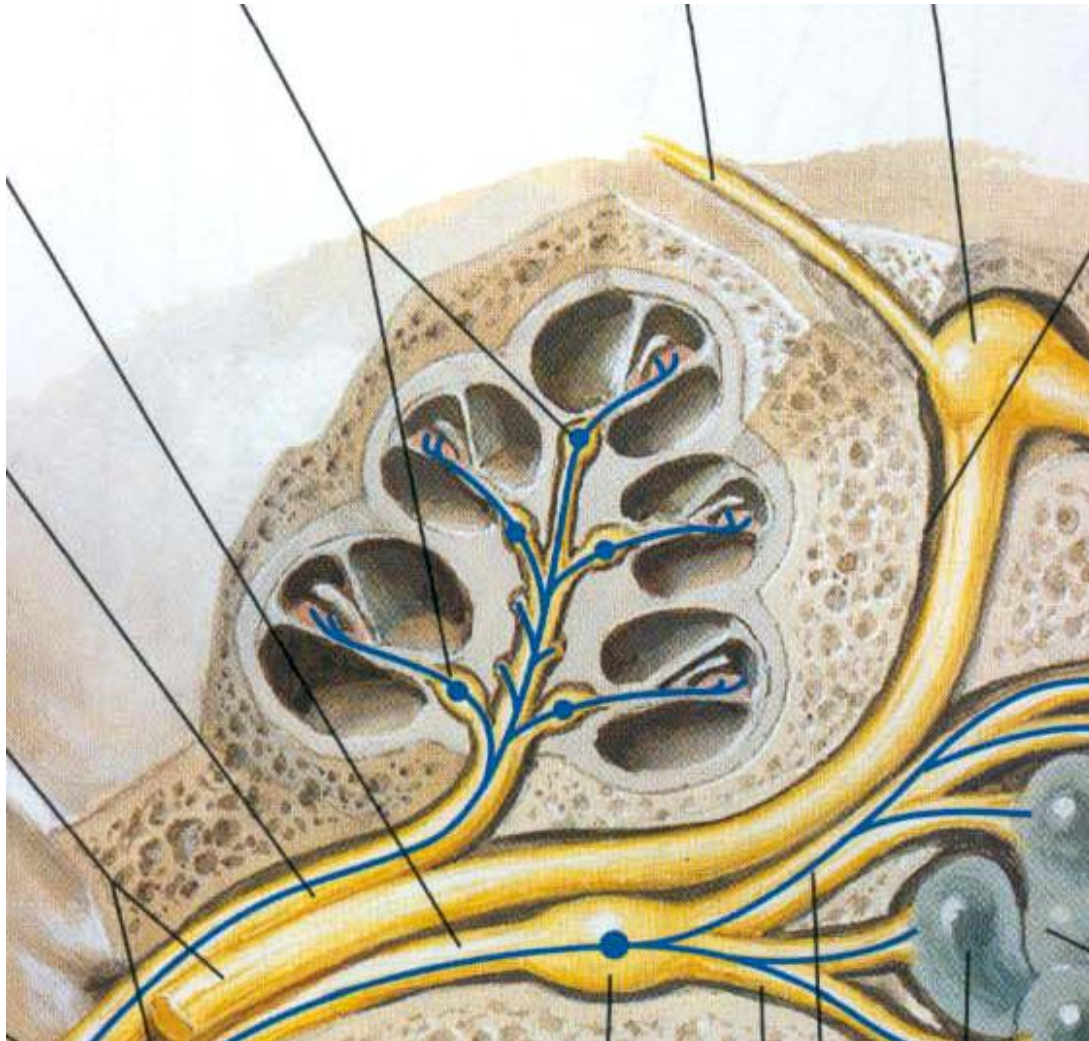
Vestibulocochlear n (CN-VIII) and related pathways



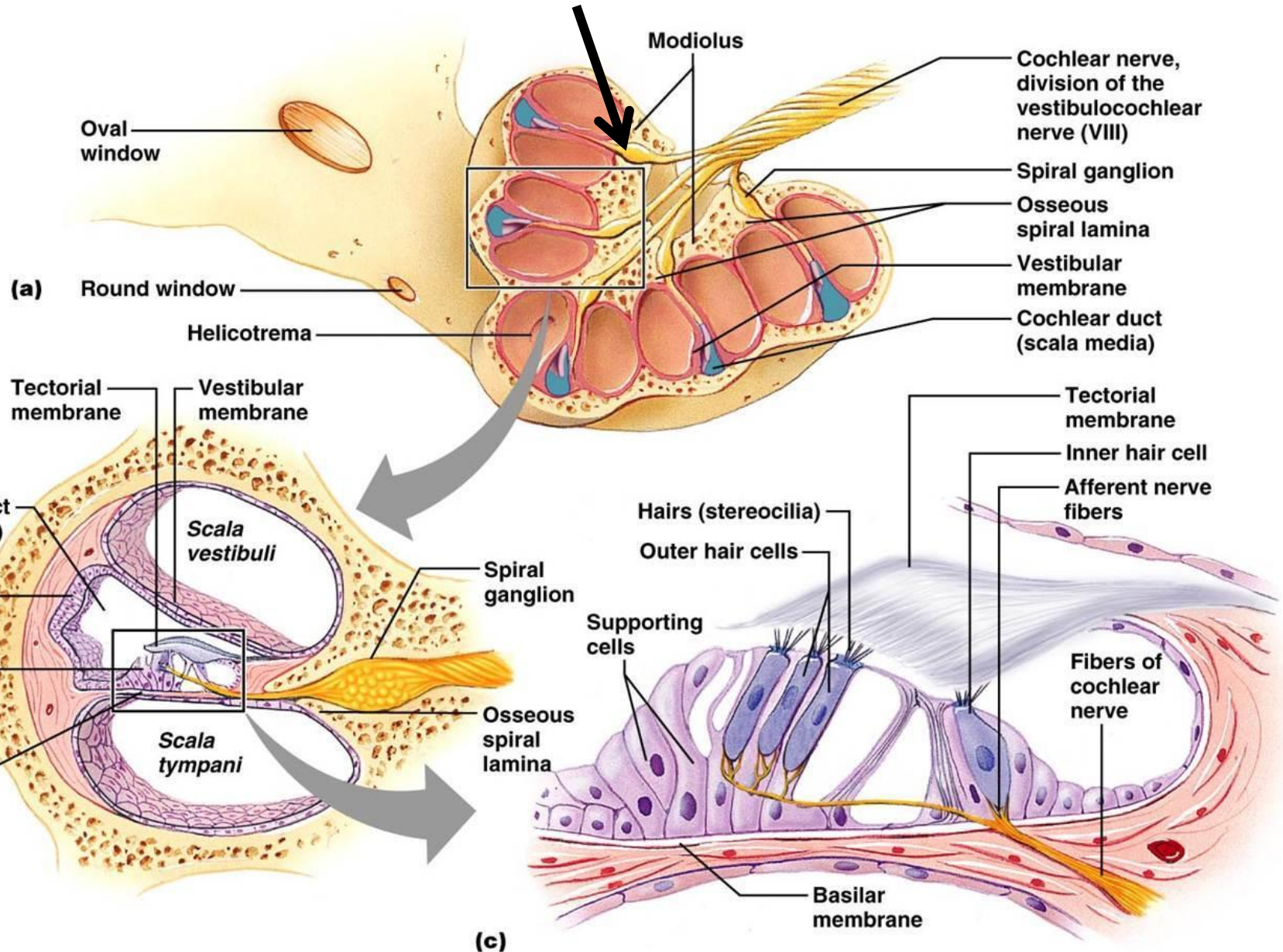
Oval (vestibular) window



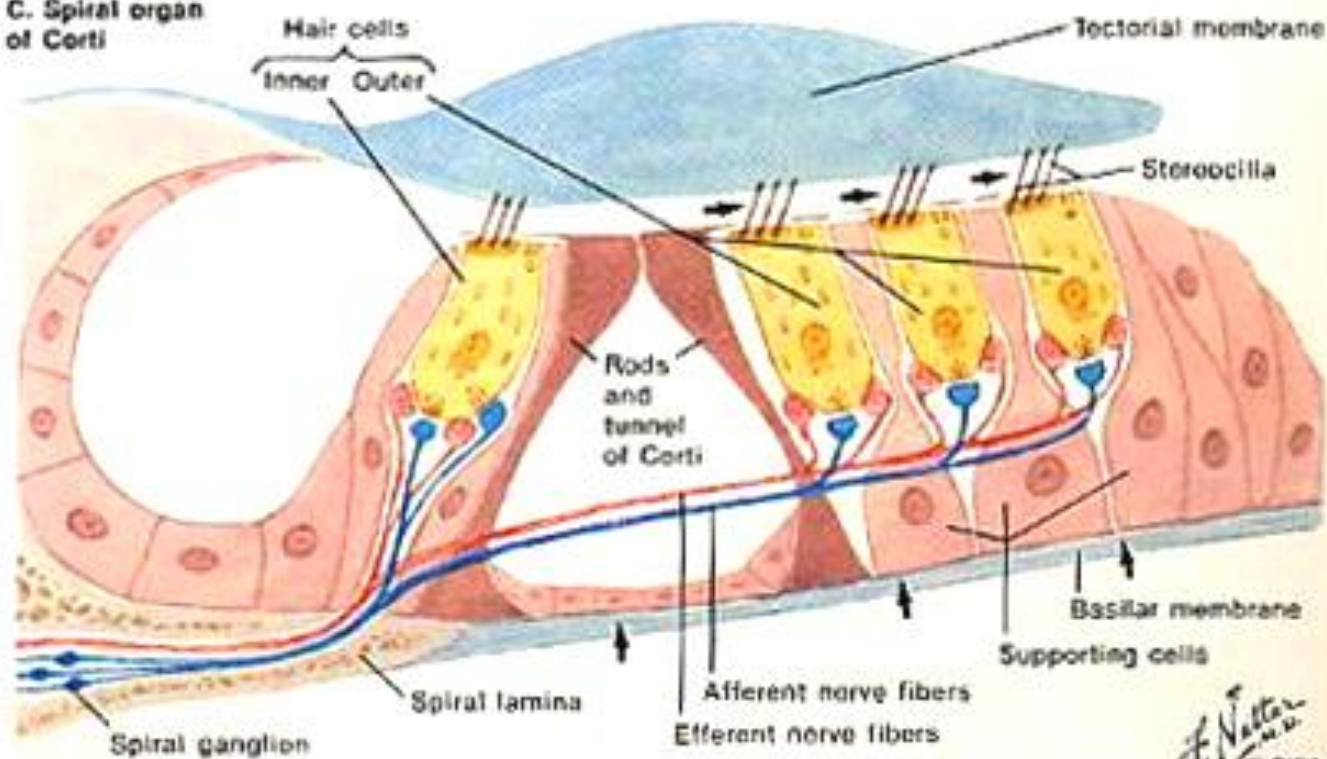
oval window → scala vestibuli → scala tympani →
basilar membrane → hair cells

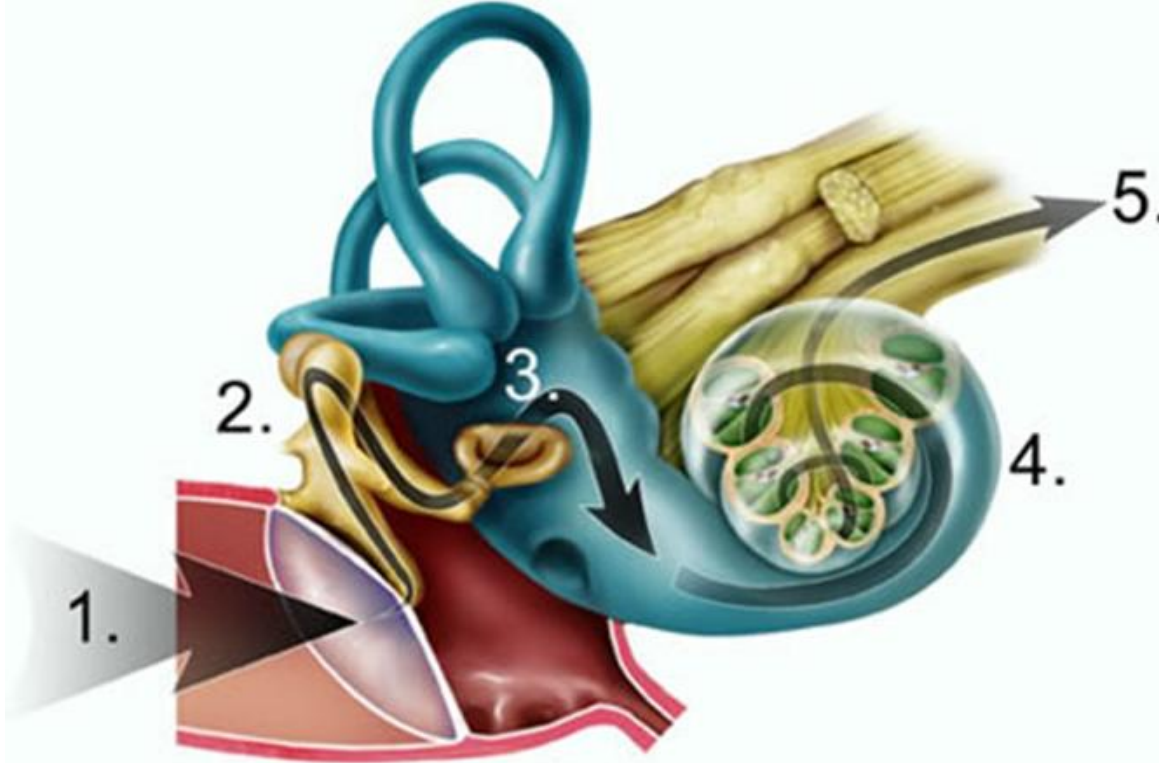


Ganglion spirale cochlea



C. Spiral organ of Corti

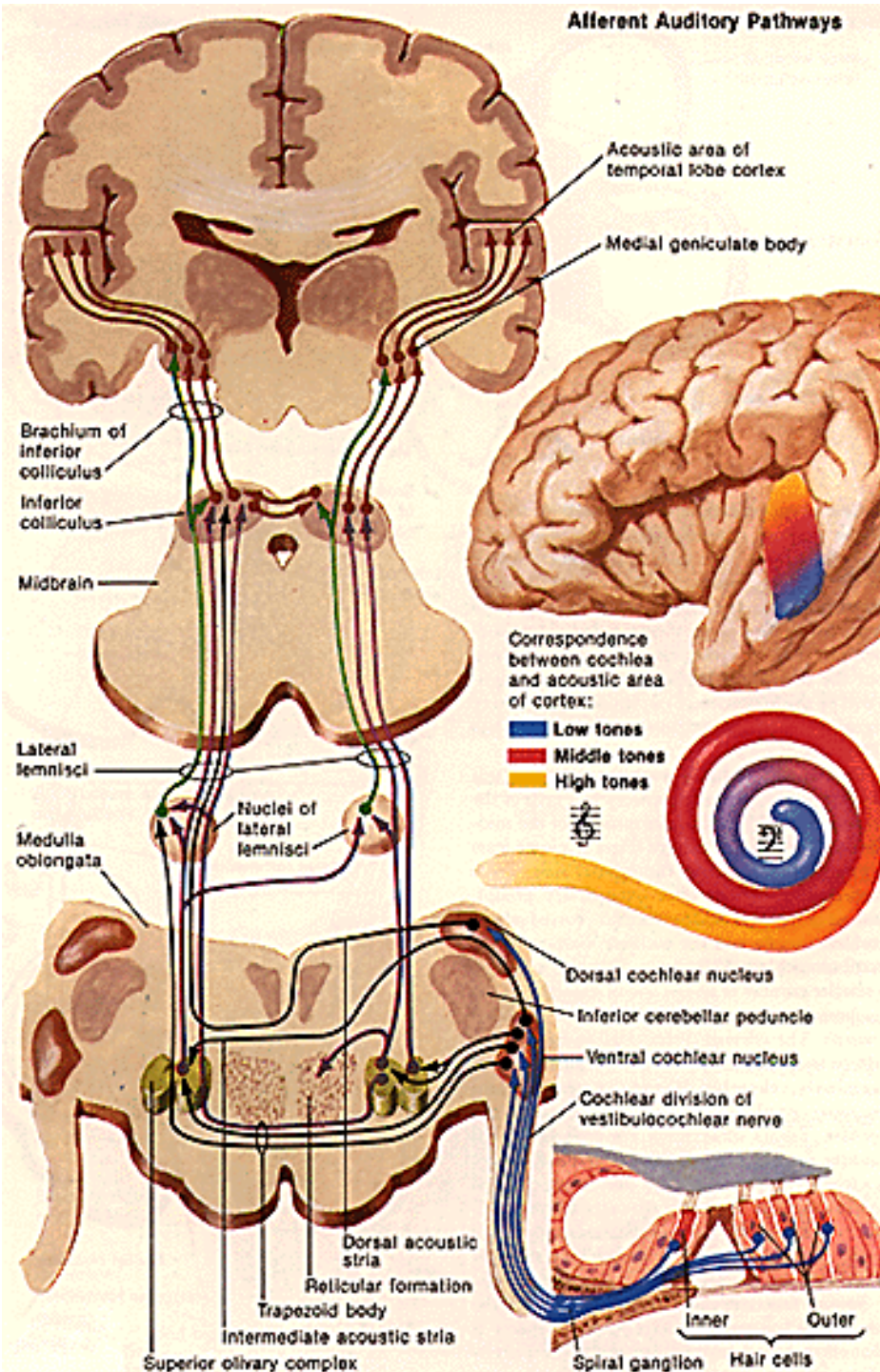


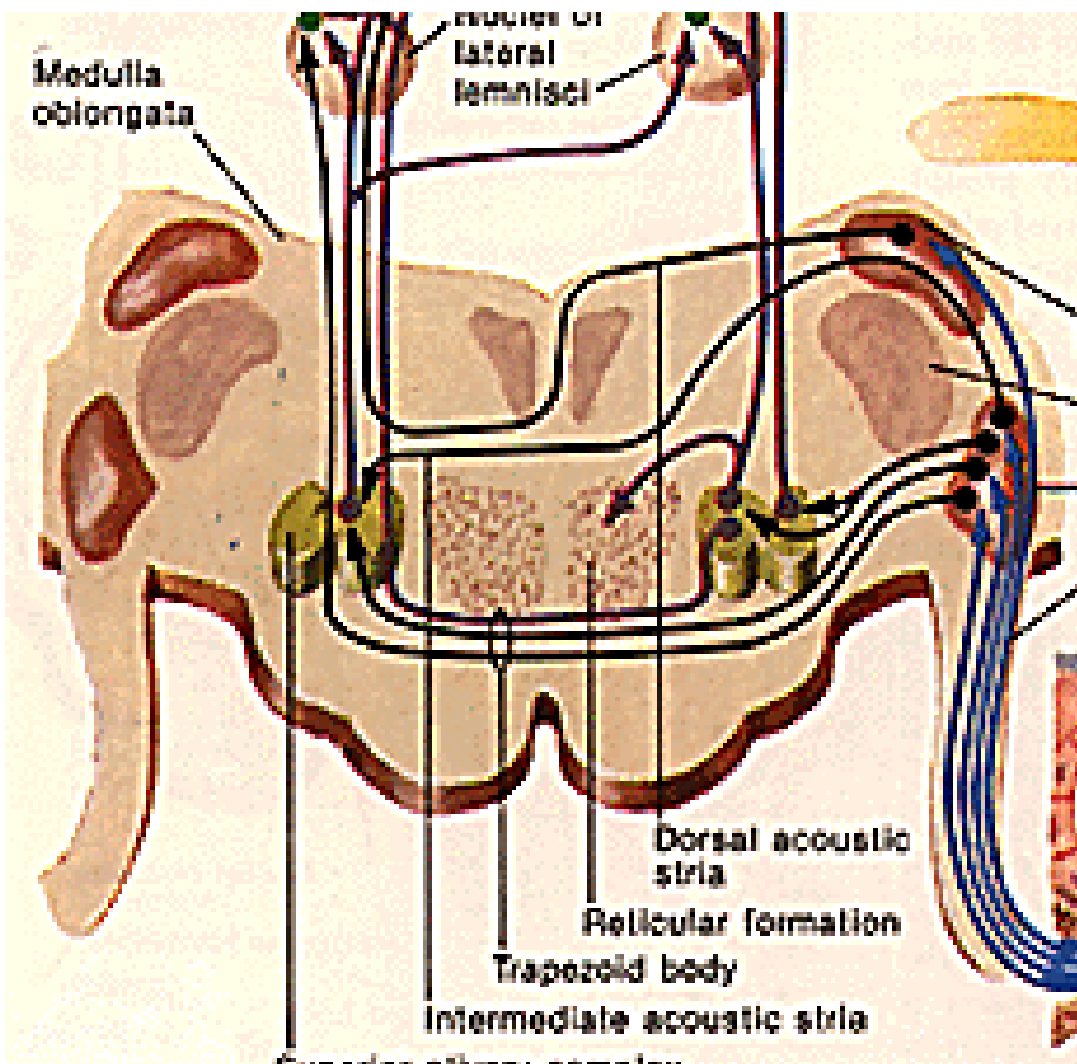


1st neuron>**spiral ganglion**
 Central fibers from modiolus
 runs as **cochlear n**
 Peripheral fibers are in
 contact w the bases of the
 hairy cells in the organ of
 corti

5. Cochlear n>IAM>
 bulbopontine
 sulcus>**dorsal and
 ventral
 cochlear nn** (2nd
 neuron)>
 Ipsilateral OR
 contralateral fibers in
lateral lemniscus>
inferior colliculus-from
 here up ALL of the fibers
 run ipsilateral>**medial
 geniculate nucleus** (3rd
 neuron)>cortex
(41,42,22)

Afferent Auditory Pathways





Ventral acoustic stria (largest)

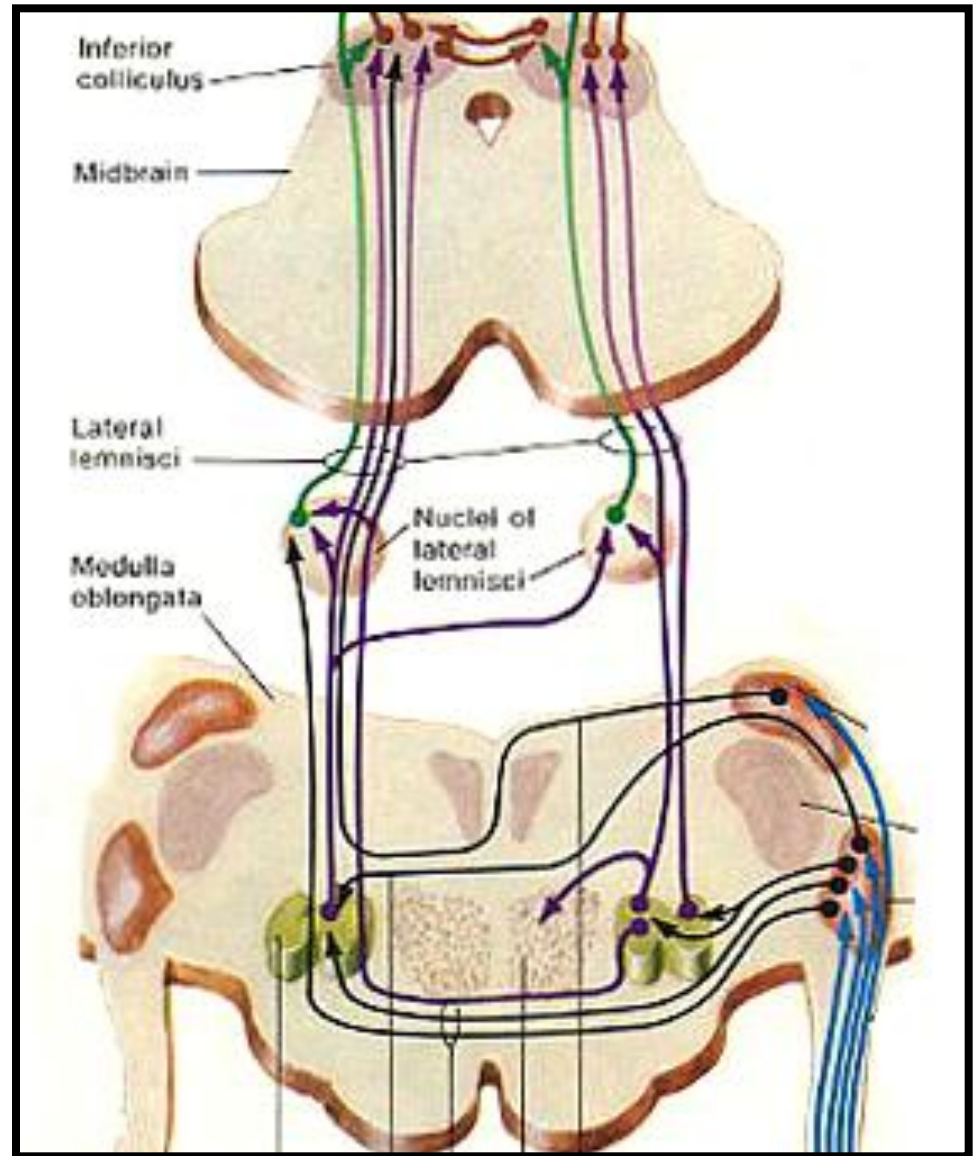
Intermediate acoustic stria

Dorsal acoustic stria



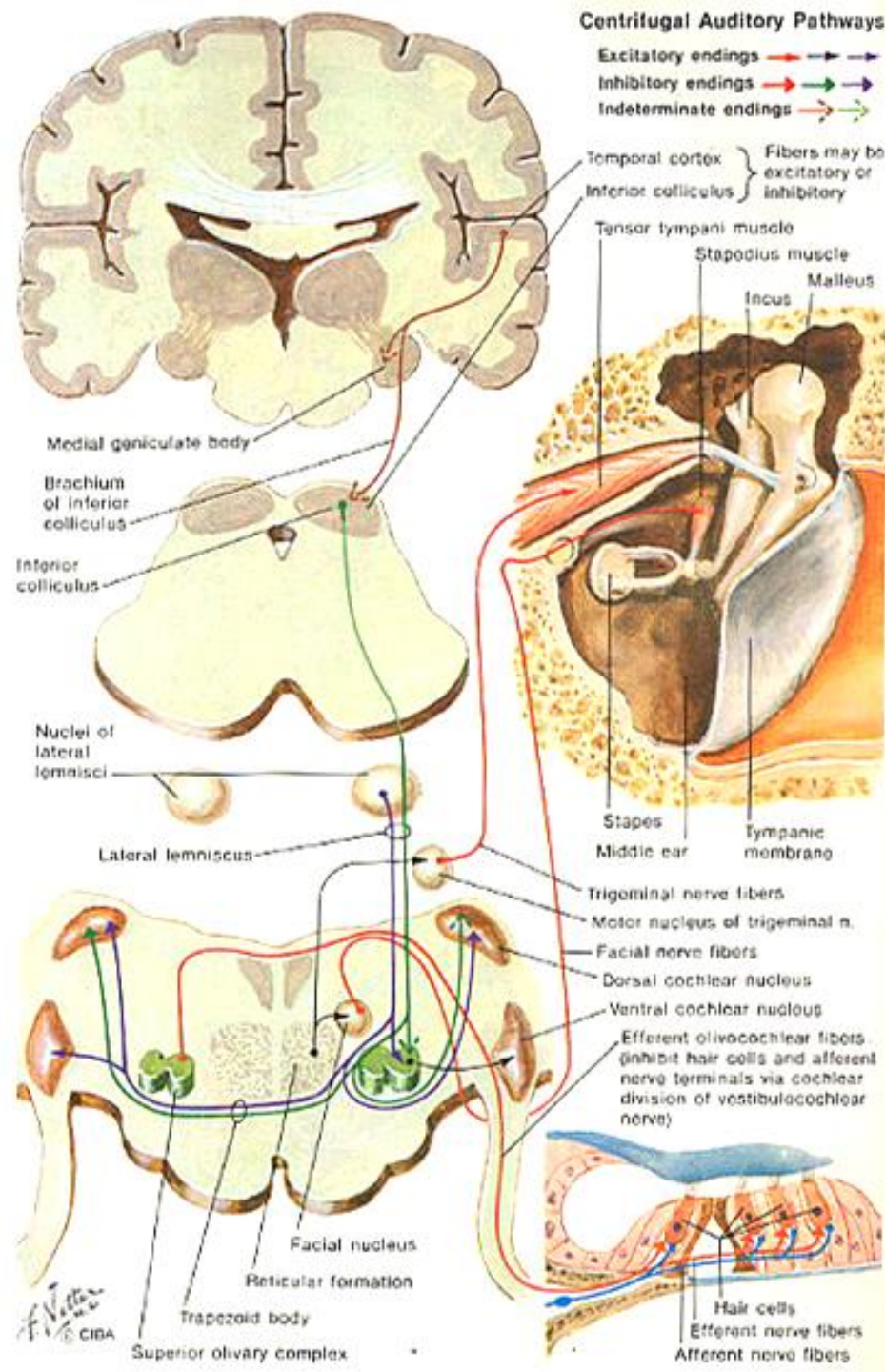
Relay nuclei between the cochlear nuclei and inf colliculus:

superior olivary nuclei
nuclei of trapezoid body
nuclei of lateral lemnisci

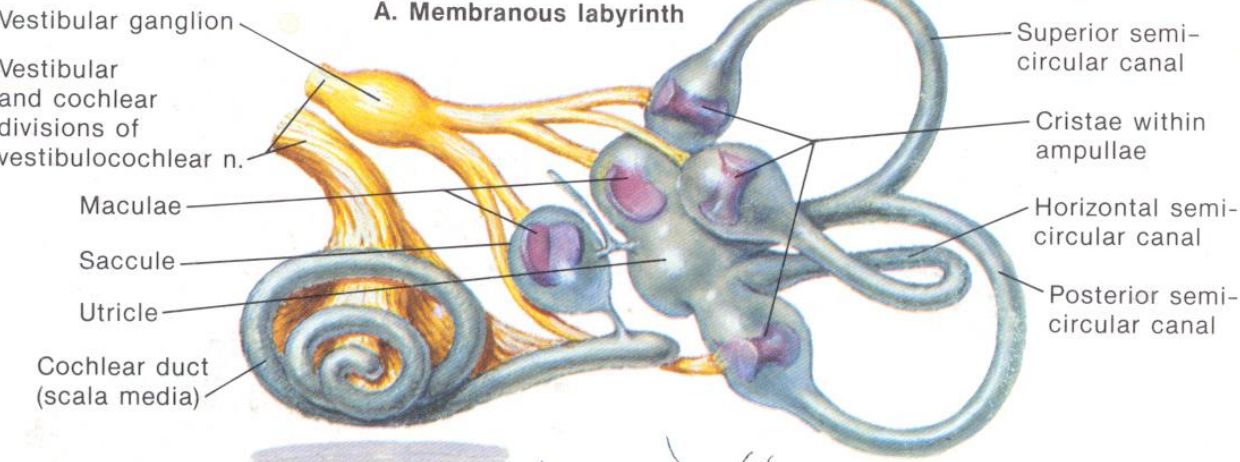


Centrifugal Auditory Pathways

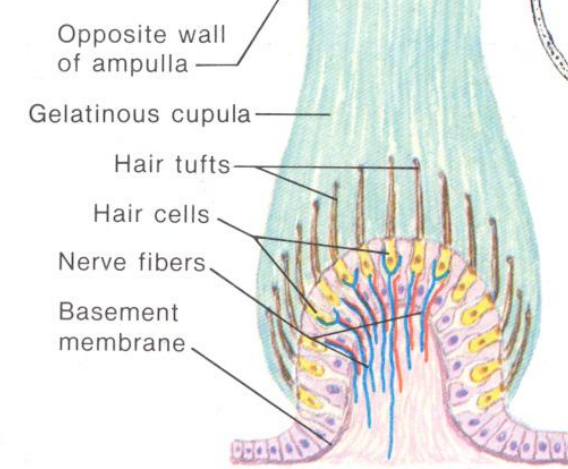
- Excitatory endings → → →
- Inhibitory endings → → →
- Indeterminate endings → → →



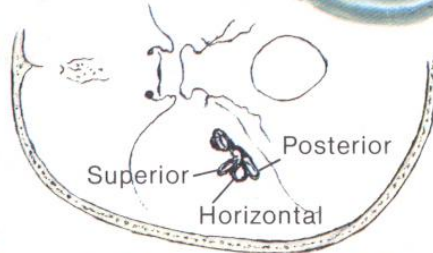
Vestibular Receptors



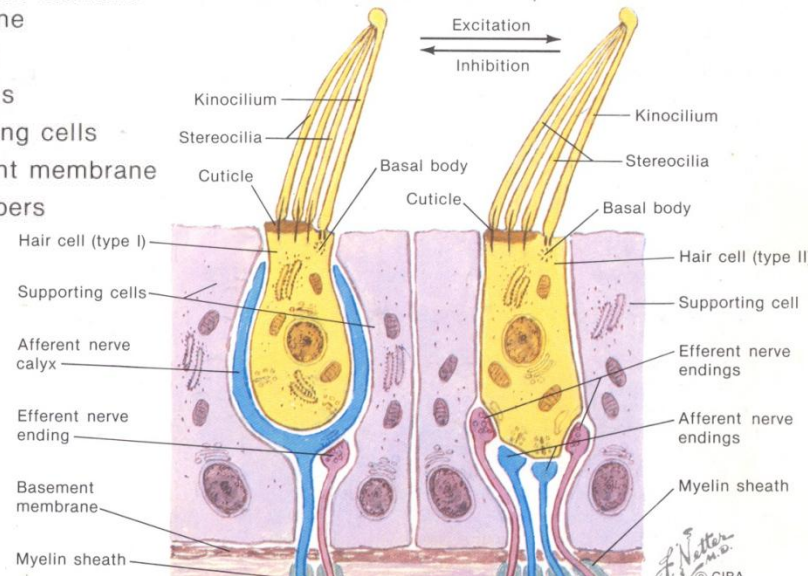
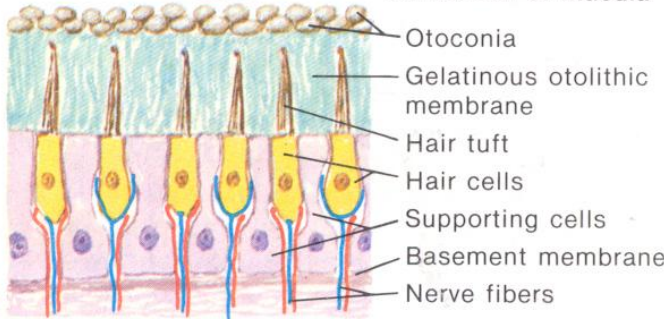
C. Section of crista



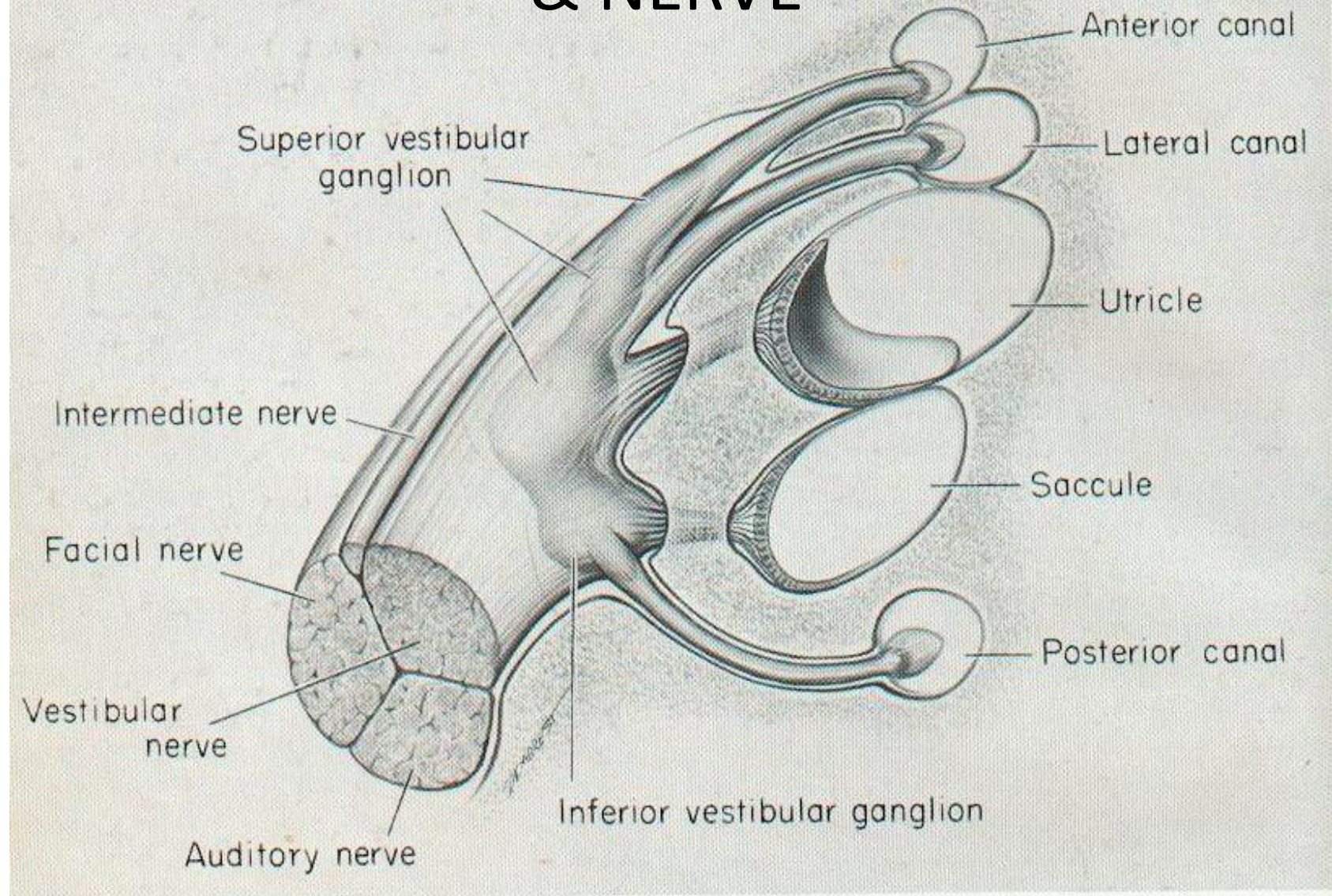
B. Position within base of skull



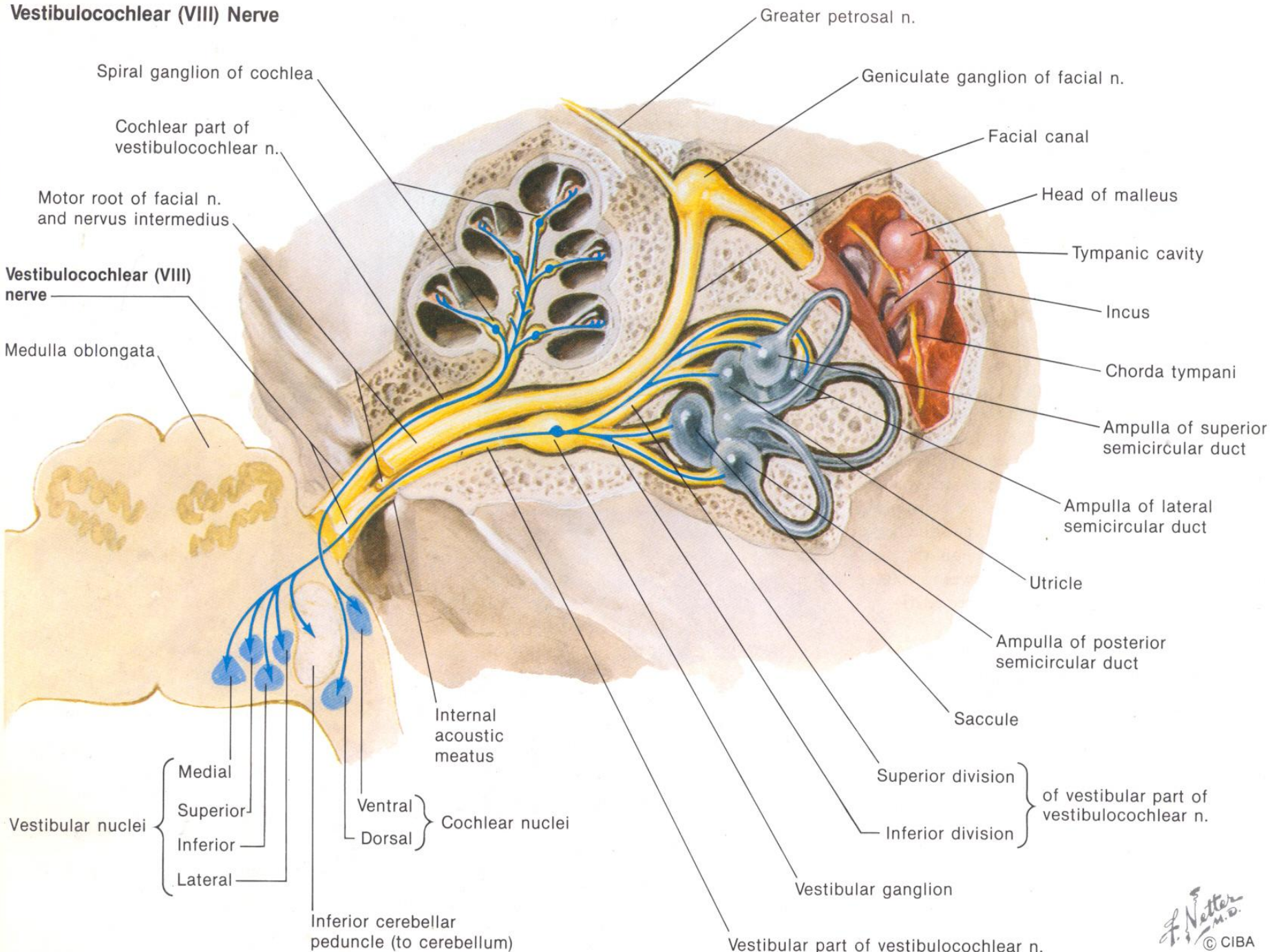
D. Section of macula



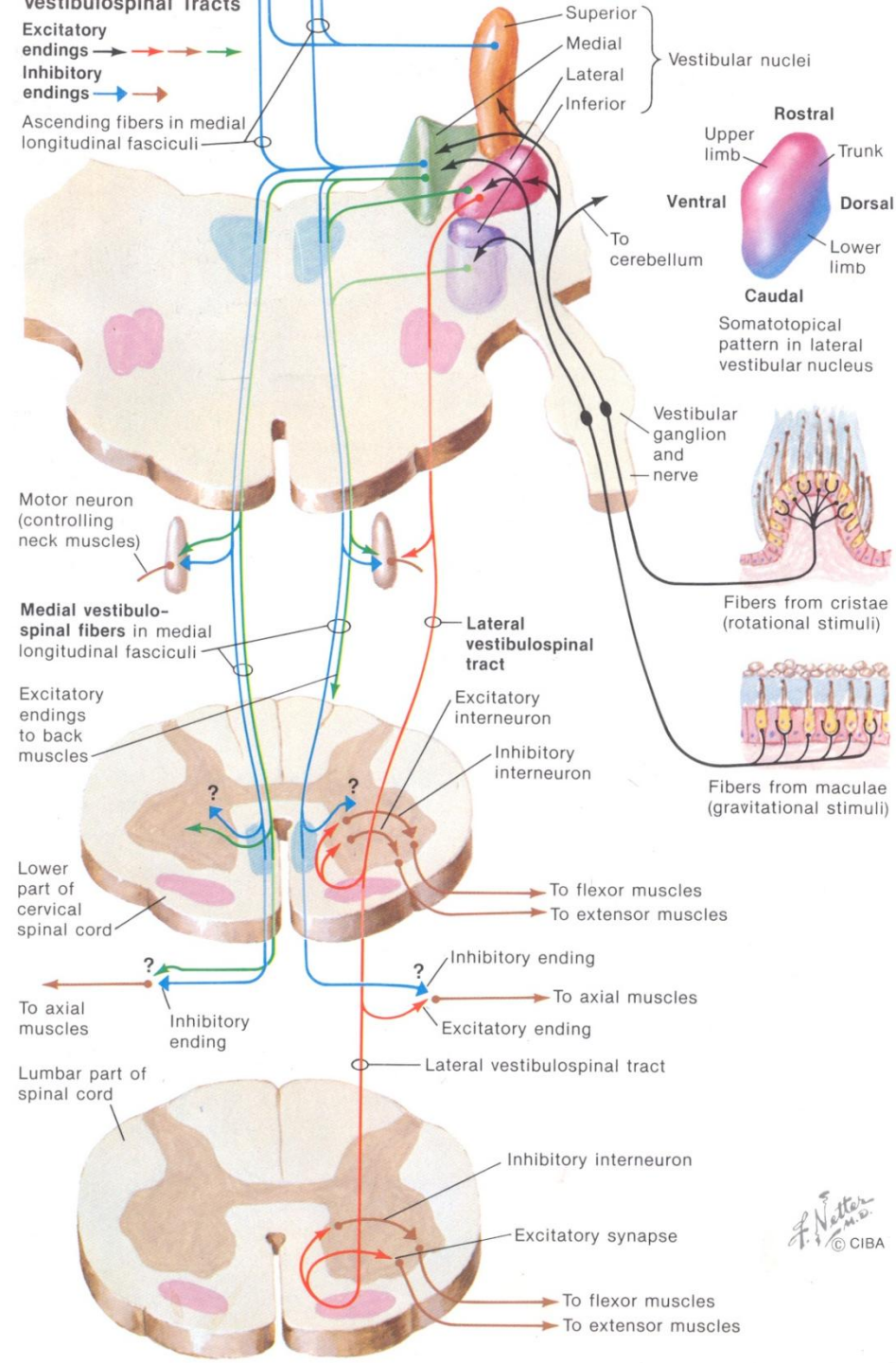
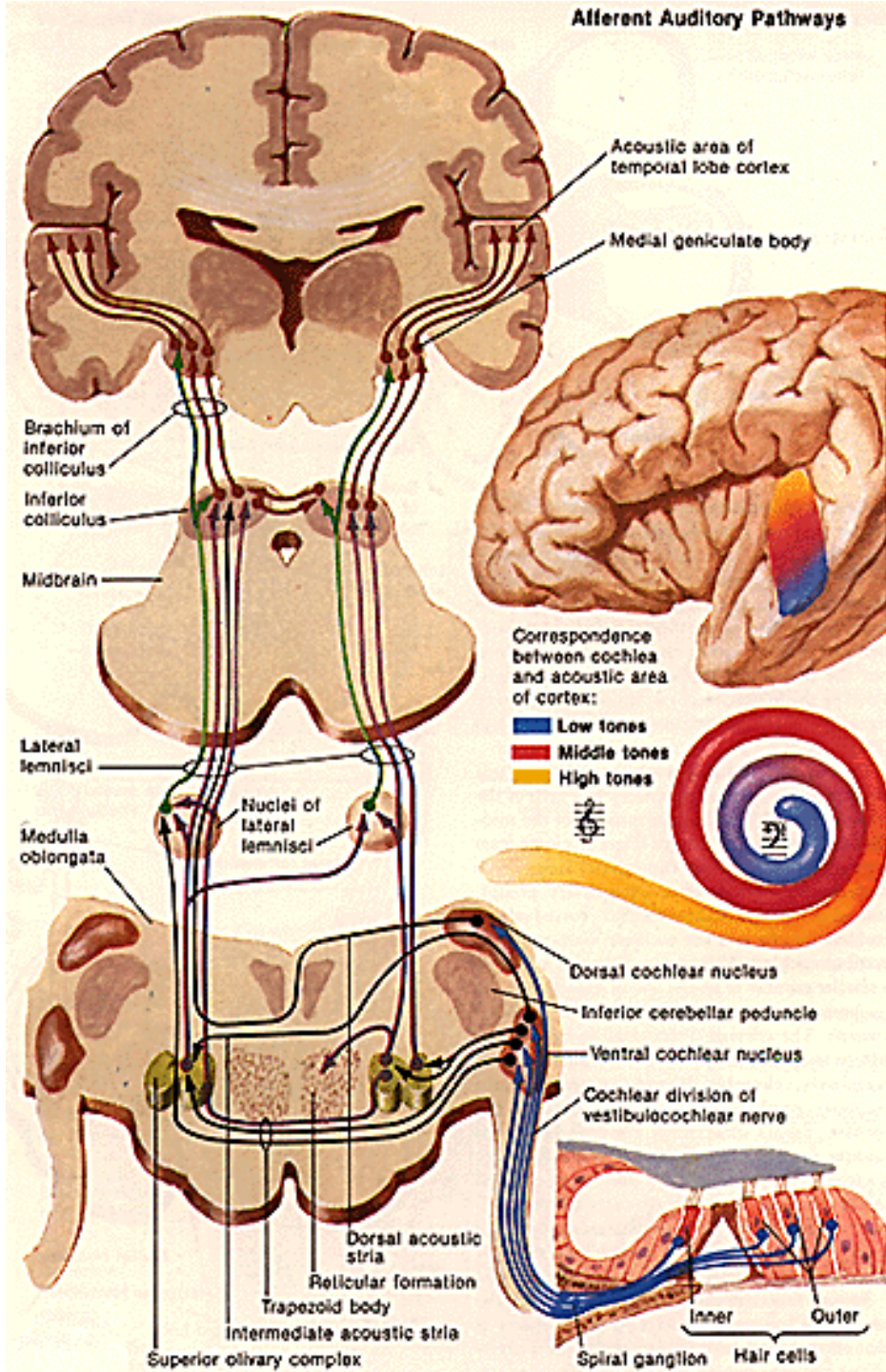
VESTIBULAR GANGLION & NERVE



Vestibulocochlear (VIII) Nerve



Afferent Auditory Pathways



A close-up photograph of a large, light-brown dog, possibly a Mastiff, lying down. A small, striped kitten is nestled inside the dog's ear, appearing to be asleep. The dog's head is resting on a dark surface, and its large, dark eye is visible. The kitten is looking up towards the camera.

*Thanks for lending
me an ear*